An Address
ON
ACQUIRED IMMUNITY.

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GENTLEMEN,—Against some zymotic diseases—e.g., small-pox and measles—an average individual is able, through illness and recovery, to acquire life-long immunity; against other diseases—e.g., diphtheria and relapsing fever—immunity may be acquired, but is of limited duration only, and in a shorter or longer time the individual, lapsing his acquired powers of making resistance, becomes as liable to infection as ever he was; against a third class of diseases—e.g., tuberculosis and leprosy—immunity can never be acquired; in other words, experience of such diseases never confers on the sufferer increased powers of making resistance even for a limited time, whence it follows, as a corollary, that such diseases may persist in the individual for a length of time that is only limited by the duration of his life, no matter how long that may be.

Now it is very noteworthy that it is only against diseases the micro-organisms of which produce more or less powerful toxins—as judged by their systemic effects—that immunity can be acquired. When the toxins are feeble or non-existent—e.g., in tuberculosis and leprosy,—when the onset of the disease is unmarked by symptoms of poisoning, when the pathogenic micro-organisms, instead of engaging at long range, enter at the outset into what may be termed an actual physical struggle with the phagocytes, which, undeterred by toxins, at once attack the disease germs, and taking them into their substance attempt to destroy them then immunity cannot be acquired. Malaria is an apparent exception to this rule, for here the toxins are undoubtedly powerful, yet immunity seemingly can never be acquired; but it seems probable that this disease should rather be regarded as one against which more or less complete immunity is very rapidly acquired and as rapidly lapsed, for thus only can we explain the alternations of extreme illness, during which the parasites are abundant in the blood, with comparative health, during which they are absent or almost absent from it, and when such of them as still survive the assault of the phagocytes probably exist in a comparatively harmless but highly resistant form—e.g., as resting spores. Moreover, the completeness with which immunity may be produced against any disease, though not its duration, seems, generally speaking, in direct proportion to the quickness with which the toxins are produced and to their degree of virulence. The duration of the immunity depends on factors of which we have as yet no knowledge; but it seems more than probable that it is determined by the chemical constitution of the toxins in each disease. It is clear, then, whenever immunity can be acquired against any disease, that it is associated as effect and cause with the fact that in any such disease more or less potent toxins are always present. In a recently published work[1] I endeavoured to show why this must necessarily be so; but recent though the work is, still more recent researches, especially those in snake venom by Professor Calmette and Professor T. R. Fraser, render necessary further developments and emendations of the hypothesis set forth in it—a hypothesis that is founded on Metchnikoff's famous theory of phagocytosis.

Different inquirers have propounded different theories of *rationale* of acquired immunity. It has been supposed (Pasteur) that the pathogenic micro-organisms of each disease against which immunity may be acquired find, every species of them, some special pabulum on which they subsist, but on which no other species subsist, and that when this special pabulum is exhausted they perish from starvation. In diseases against which acquired immunity is usually permanent—e.g., small-pox—this pabulum, it was supposed, is usually not renewed; but when immunity is not permanent—e.g., diphtheria—it is renewed, whereby the individual once more becomes susceptible. Again, it has been supposed (Chauveau) that acquired immunity arises because the waste products of micro-organisms are inimical to their own life, as alcohol is to yeast; and, therefore, when this reaches a certain percentage in the fluids of the host the micro-organisms perish, as yeast perishes when alcohol reaches a certain percentage in a solution of sugar. In diseases against which acquired immunity is permanent it was supposed by this theory that these waste products are permanently bottled up within the host, but that they are eliminated after a time in diseases against which immunity is not permanent. Both these hypotheses are negatived by the fact that the micro-organisms of certain diseases—e.g., anthrax—are able to flourish in the blood serum of animals that have acquired immunity against them. Metchnikoff's theory supposes that certain cells of the body known as phagocytes attack and destroy the micro-organisms when they find entrance, and that when toxins are present these cells acquire powers of resisting or ignoring them; and, further, when immunity is permanent such powers are permanent, but when immunity is only temporary they are after a time lapsed.

It is now beyond dispute that phagocytosis does occur. All that is in dispute is whether it is the sole or even the principal cause of immunity. More recently Behring has propounded the theory, which received very general assent, that acquired immunity is due to the elaboration by the host of specific antitoxic substances which chemically neutralised or antagonised the specific toxins as an acid is neutralised by a base. Lastly, Fraser[2] and others, modifying Behring's theory, have surmised that the antitoxins are constituents of the toxins, or else by the action of the host are produced from them, and, like Behring, Fraser thinks that they chemically neutralise the toxins. The theories of Pasteur, Chauveau, and others which it is needless to mention, had their day, but are now known to be erroneous. Metchnikoff's theory was in vogue for some years, but lately seems to have passed somewhat into the background; whereas Behring's theory, or modification of it, like Fraser's, appears so well to fit many of the ascertained facts, especially those most recently ascertained, that they are now largely accepted. In particular, Behring's theory appears to be in accordance with his own highly important discovery that if the toxins of a pathogenic organism be injected in proper quantities and for a sufficient length of time into the body of one of the higher animals the blood serum of this animal acquires specific antitoxic properties; that is, a given quantity of it tends to neutralise or render harmless given quantities of the toxins of that particular organism, not only when the substances are mixed *in vitro*, or when they are injected separately into the body of another and a susceptible animal, but also during the course of disease, when the specific toxins are produced within the body, and the specific antitoxin alone is injected; while they do not neutralise or render harmless the toxins of any other species of micro-organisms. But apart from the inherent improbability that the animal body is a species of magic bottle, producing at need highly complex chemical substances, the so-called antitoxins, which exactly neutralise or antagonise other highly complex chemical substances, the toxins, the right antitoxin at the right time, as Behring thinks; or that the toxins contain, or are capable of being converted into substances chemically antagonistic to themselves, and to no other toxins, as Fraser thinks, there are certain facts known to us concerning various diseases which prove that neither theory, even if correct, offers a complete explanation of all the facts, while a closer examination furnishes solid grounds for doubting whether either offers a correct explanation of any of them.

For instance, Pasteur killed rabbits suffering from rabies and dried their spinal cords. His treatment for the cure of an infected subject consisted in the injection into him of an emulsion from an old and thoroughly desiccated cord, was continued by injections from fresher and fresher cords, and ended by the injection of an emulsion from a cord that was absolutely fresh and virulent. By these means he enabled many individuals, who already had been infected, and would otherwise have perished, to acquire immunity. It is clear that the immunising agent, the "antitoxin," is here produced in the dead and drying cord, not in the living infected animal from which the cord was taken, since in the latter case such an animal would not perish if left to itself, as it invariably does, and since the immunising substance is procurable from old and dried cords and not from those which

[1] The Present Evolution of Man.

[2] Vide Abstract of Lecture, THE LANCET, April 25th, 1896, or a full report in "Nature," April 16th and 23rd, 1896.

are absolutely fresh. It is therefore not produced by the vital action of the cells, but arises in the absence of all vital action in a dead thing. No doubt chemical changes do occur in a desiccating cord, but it would be strange if these resulted (1) in substances chemically antagonistic to the particular toxins and to no other, or (2) in the conversion of the toxins into substances chemically antagonistic to themselves, or (3) in the destruction of the toxic portion of the poison while a hypothetical antitoxic portion was left unaltered. Again, by submitting the bacilli of anthrax to an abnormal degree of heat (from 42° to 43° C.), Pasteur found that they gradually lost their virulence, and found, moreover, that if sheep were inoculated first with bacilli of little virulence, next with those of greater virulence, and lastly with bacilli of great virulence, the animals could be rendered immune to bacilli of the greatest virulence, and could thereby be protected against the disease. In this case the bacilli are introduced alone or with an insignificant amount of toxin. The "antitoxins," whatever they may be, are elaborated within the sheep, and it is difficult to understand, if they are substances chemically antagonistic to the toxins, why they should be elaborated only when the animal has undergone such treatment and not otherwise. Again, if we pass the virus of small-pox through a series of calves, the organism producing that disease becomes so "attenuated" that if a human being is vaccinated from the calf there results not variola but vaccinia. In this case, as in vaccination against anthrax, only the attenuated micro-organism, with at most an infinitesimal amount of its products, is introduced, yet the result is that the powers of resisting the graver disease are acquired. Here, again, chemical neutralisation cannot possibly play a part. Lastly, the micro-organisms of certain diseases (e.g., malaria) vary greatly in virulence, sometimes being productive of a very grave disease, and at other times of a much milder disorder.[3] To this category belong the bacilli of diphtheria, and it has been found in German hospitals when, owing to the difficulties in the way of efficient nursing during a wide-spread epidemic, mild cases were admitted among the graver cases that the latter showed a greater tendency to mend than had been observed before. Here, also, the production of chemically antagonistic substances can hardly have had anything to do with the improvement; but we may well believe that in this case also the improvement was due to attenuated bacilli from the milder cases finding their way to the severer, where their weaker toxins furnished stepping stones for the attainment of resisting power against the stronger.

Now these facts and many others, as we shall see, are in full accord with Metchnikoff's theory, but are not at all in accord with Behring's. We may believe that in the drying cord of the hydrophobic rabbit, in the abnormally heated anthrax culture, in the calf infected with the organisms of small-pox, in the mild diphtheritic cases, the pathogenic organisms are so altered that they produce enfeebled toxins, and that by these enfeebled toxins the cells (probably the phagocytes) of the infected animal are so inured, so educated, that they are able to resist the stronger toxins of the normal microbes and to destroy the pathogenic organisms producing them; but it is at the least a gratuitous assumption to suppose that micro-organisms, which have been attenuated or constitutionally modified by subjection to a changed environment, produce secretions chemically antagonistic to those which they produce in their normal surroundings, or, on the other hand, as the only alternative, that the infected animal produces them the more readily for previous experience of these attenuated toxins. The process whereby the infected animal acquires immunity, whereby it becomes so modified that it is able with comparative ease to resist the effects of toxins which before it was incapable of resisting, or could have resisted only with difficulty, is after all no miracle, but only a particular manifestation of that power of acquiring a multitude of fit traits by means of which high animal organisms place themselves in harmony with their enormously complex environment. I have dealt at length with this interesting question of acquired traits elsewhere.[4] It is needless to repeat arguments which, as far as I am aware, have received general assent. It suffices to remark that while such a phenomenon as the production by pathogenic micro-organisms in a changed environment of toxins which are chemically antagonistic to those which they normally produce, or the production by an infected animal of anti-toxic substances chemically antagonistic to the toxins of the microbes by which it is assailed, has no parallel in nature, that process of adaptation by means of which, as I here suppose,[5] the phagocytes or the other cells concerned are gradually so modified constitutionally that they are able to resist microbic poisons which before they were unable to resist has innumerable parallels. Thus, for instance, if the mucous membrane or the external skin be subjected to intermittent heat or friction or the action of chemical irritants, the cells of it become so modified, both as regards quality and numbers, that they become capable of resisting degrees of heat and friction, &c., which would otherwise injure or destroy them. Thus, also, muscle cells, under the influence of intermittent exercise, acquire additional powers of resisting fatigue. But the closest parallels are furnished by the increased powers of resistance which man is able to acquire against various poisons—for instance, arsenic, opium, and nicotine (the last two being to all intents and purposes toxins, since they protect the organisms producing them against other organisms to which these are liable to fall a prey). Here again we may well believe that the cells concerned (nerve cells, &c.) become, through experience of these poisons, so constitutionally modified that at length they are better able to resist them when presented in larger and more concentrated doses than before they were able to resist them when presented in weaker doses. I suppose that no one will maintain that increased resistance to opium, arsenic, or nicotine results from the manufacture of a substance antitoxic to these poisons. Yet it would be as reasonable as to suppose that immunity from rabies, anthrax, or small-pox results from similar causes. I think, then, we may fairly conclude that (in the cases cited at least, and probably, as we shall see, in all others) the essential feature of acquired immunity (or increased powers of resistance) is an habituation of the cells concerned to the toxin, as a result of which their phagocytes are able to destroy the pathogenic micro-organisms producing it; and, further, in cases where the toxins are very poisonous, that this habituation, this power of ignoring the toxins and destroying the microbes, is more easily achieved (just as other acquired traits are more easily achieved) gradually, by a series of efforts than at once by a single effort, so that in such an extreme case as rabies, when the toxins are so virulent that normally reaction to them is impossible, immunity may be obtained by subjecting the animal first to weaker and then to stronger toxins, till at last it is able to resist even the strongest toxins, and so escape an otherwise inevitable death.

The principal objections to this view have origin in Behring's discoveries, and from them have resulted his theories and such modifications of them as Fraser's. It was found by him that if toxins—e.g., those of diphtheria—be injected into a living animal—e.g., a horse—beginning with small non-lethal doses and proceeding at intervals to stronger and stronger lethal doses, that the animal experimented on not only acquires immunity against the disease and powers of resisting enormous doses of the toxins, but also that its blood serum (1) when injected into an animal susceptible to the disease tends to render it resistant, just as progressive doses of toxin would (2) when injected into an animal already suffering from the disease tend to bring about a cure, and (3) when injected before or at the same time, or shortly after the toxin, or when mixed with the toxin *in vitro* previously to injection, tends apparently to neutralise or antagonise the toxin; so that, especially in the last case,[6] doses of the toxin much larger than those which are ordinarily lethal can be borne with impunity. Moreover, Fraser found that if snake venom be swallowed, as it may be, in enormous quantities without injury, that then also the animal experimented on acquires immunity and its serum antitoxic properties. In all these instances it was found that the acquired powers are specific—that is, experience of the toxins of any disease confers immunity against that disease alone and not against any other, while the resulting serum also confers immunity against, has curative powers against, and antagonises the toxins of that disase and no other.

Metchnikoff's theory furnishes an explanation of the increased powers of resistance to any toxin which experience of it confers on the serum producer. In this case, as in disease, we may suppose that the cells concerned become

[3] Vide Present Evolution of Man, pp. 239–10.
[4] Ibid., pp. 114–19.

[5] A view first set forth by Tizzoni and Cattani.
[6] At least, so Fraser alleges, though his statement appears now to be disputed.

habituated to the toxins, hence the high degree of resistance. But the theory as set forth above is totally inadequate to account for the rest of the phenomena just detailed. Presumably the antitoxic serum contains toxins in solution. It follows, then, that this serum, instead of conferring immunity or antagonising the toxins, should add to the effect of them by increasing the dose. The fact, however, is the reverse, for it clearly does confer immunity and apparently also, judging from the experiments *in vitro*, it does antagonise the toxins. Except, then, these difficulties are surmounted we must abandon the theory which supposes that increased powers of resistance are due to increased powers of toleration.

The key to the mystery is probably furnished by Fraser's experiments. We have seen that snake poison may be swallowed in enormous quantities, when, so far from causing death, it actually confers some degree of immunity on the animal swallowing it and some degree of immunising power on his serum. Fraser, indeed, conjectured "that the venom while in the stomach had been subjected to a process of analysis by which the constituents which are poisonous had failed to be absorbed into the blood or had been destroyed in the stomach, while the constituent or constituents which are anti-venomous, or rather antidotal, had passed into the blood in sufficient quantity to protect the animals against otherwise lethal administrations of the venom."[7] But this conjecture seems very improbable and far-fetched. On biological grounds it is highly improbable, to say the least, that snake venom contains a substance antidotal to itself—i.e., that the animal's weapon of offence and defence has combined with it a substance which enfeebles it. Again, it is not in accordance with known facts that the alimentary canal possesses the power of intelligent choice which Professor Fraser attributes to it, by virtue of which it accepts the good and rejects the evil. The function of the canal is digestion; and surely, since animals are not poisoned by huge doses of swallowed venom, we are entitled to assume that the venom, like other proteids, undergoes digestion; and, further, since the swallowing of venom confers on the animal increased powers of resisting the injected poison, and on its serum antitoxic properties that these effects are due to a reaction, induced by the altered, the attenuated, the digested toxins, of a similar nature to that induced by other altered and attenuated toxins—e.g., those of rabies, anthrax, or small-pox. If this be admitted, as I think it must, then we arrive at the conclusion, of great importance in our inquiry, that here the venom is attenuated by ferments secreted by cells lining the alimentary tract, not by the cells themselves—that is, by ferments which digest the toxins extra-cellularly, but are innocuous to the cells themselves.

Now, phagocytosis itself, whether in low unicellular or high multicellular organisms, is nothing other than a process of digestion—i.e., the cells destroy the micro-organisms which they have taken up, not by mechanical means, by pressure, or by tearing, but, as cannot be doubted, by digestive substances which they secrete, and it has been further proved that they are capable of performing the digestive act, not only intracellularly, but like the stomach cells or the cells of the pancreas and the salivary glands extracellularly also. For instance, Metchnikoff found that when the gregarines which infest the male genital organs of the earthworm become passive previously to spore formation they are attacked by wandering cells which form a thick plasmodium round them. The parasite on its part forms a thick cyst-wall, but nevertheless frequently undergoes degeneration and death. Kanthack and Hardy found that when anthrax bacilli are introduced into frog's blood "the coarsely granular oxyphile cells act as unicellular glands, discharging or secreting their granules, and these granules dissolving appear to exert a deleterious action on the bacilli, in consequence of which the hyaline cells are now capable of ingesting them."[8] Other inquirers have made observations of a like tendency. And it has also been found that intruding micro-organisms perish when at a distance from the cells as well as when they are ingested, or when the cells are applied closely to them. Thus Nuttal, on introducing a fine cannula containing attenuated anthrax bacilli into a rabbit's ear, found that phagocytosis reached its maximum after twenty-two hours, but that even then half the bacilli lay free and not ingested by the phagocytes, but exhibited nevertheless as much signs of degeneration as those which had been ingested. Thus also it has been found that during recovery from diphtheria and pneumonia numbers of the pathogenic microbes perish without direct conflict with the cells. It is not too much to assume that the same agent causes the death of free microbes as that which causes the death of those which are actually ingested or those to which the phagocytes are directly applied. In other words, we have good reasons to believe that they perish by reason of a digestive substance secreted by the cells and set free into the fluids of the body, just as pepsin is set free in the fluids of the stomach. Direct evidence of the presence of this digestive substance was furnished by Leber, who placed pieces of copper in the anterior chamber of the eye, producing a purulent collection devoid of micro-organisms, the exudate from which was capable of digesting proteid matter. This, then, since it is highly improbable that there is one substance which destroys the bacilli at close quarters and another which destroys them at long range, is probably the germicidal substance found in the plasma and the serum of immune animals. But of course the digestive substance must be in greater concentration within the cells producing it and in their immediate neighbourhood than at a distance, and therefore it must act more effectively in the former than in the latter case. On the other hand, the toxins produced by the microbes must also be in greater concentration, and must act more effectively on objects in their immediate neighbourhood, and especially on those with which they are in actual contact, for which reason, doubtless, it is that micro-organisms which do not produce toxins, or produce only feeble toxins—e.g., those of leprosy and tuberculosis—are at once attacked and taken up by the phagocytes, while micro-organisms which produce strong toxins—e.g., those of anthrax and diphtheria—are not taken up till a later period, when the phagocytes have become habituated and resistant to the toxins, or even are not taken up at all, but are engaged only at long range. It is probable that the digestive substance produced by the cells is normally present in them, but that its secretion is greatly accelerated by the presence of certain foreign bodies in the blood—e.g., bacteria and their toxins.

But besides the germicidal substance there is irrefragible evidence proving that in the blood of an infected but resistant animal, or in that of a resistant animal into which toxins have been injected, there is present another and probably a distinct substance[9] which destroys or renders inert the toxins; and, reasoning from analogy, this also in all probability is a digestive substance. The commonly accepted theory is that it is a substance which chemically antagonises the toxins; but such a view commits us, as we have seen, to the belief that all the separate toxins of the separate diseases are separately antagonised by different antitoxins—a belief hardly reasonable when we consider the multitude of the diseases and the complex chemical nature of their toxins. On the other hand, it is by no means incredible that a single digestive body is capable of digesting all these "toxalbumins" just as pepsine is capable of digesting a variety of proteid substances, or even that there are two or three different digestive bodies which severally digest the toxic albumoses, globulins, peptones, &c., which the different species of pathogenic micro-organisms produce. Moreover, this antitoxic substance is very rapidly produced, since it has been found in blood drawn from a rabbit's ear immediately after the introduction of the toxin, this seems still further to confirm the view that it is a digestive body; for while appropriate stimulation (that from a toxin) might well cause its rapid secretion by cells that manifestly do perform digestive functions and otherwise closely resemble their remote amœboid ancestors, it is unlikely, not to say impossible, that these cells can instantly elaborate the right chemical antagonistic substance when they are assailed by this or that toxin, especially when the toxin is produced by a microbe of which their ancestry can have had no experience, and against which, therefore, no specific powers can have been evolved. I think we may fairly conclude, then, that the destruction or attenuation of toxins which occur in the body of a resistant animal is due to their digestion by an enzyme secreted by

[7] Vide Nature, April 23rd, 1896.
[8] Adami: A System of Medicine, by Many Writers, p. 91.
[9] This would appear from Klein's experiments. That observer found that if pure toxins were injected in sufficient quantities into a horse the serum acquired a high antitoxic but comparatively low germicidal power, whereas if bacilli were injected the reverse occurred. Fränkel claims to have separated the antitoxic from the immunising substance by heat.

cells that have that special function, and it follows, if this view be true, that when a resistant animal is recovering from a disease in which toxins are abundant, or when repeated doses of toxins are injected into a resistant animal, there must be present in his blood and in his serum when drawn off, firstly, two or more digestive substances, and, secondly, *toxins in all stages of digestion*.

Now we saw when considering Pasteur's experiments that powers of resistance against virulent toxins and the micro-organisms producing them—i.e., against the disease—are much more readily attained by a series of efforts than by a single effort; in other words, immunity is much more readily achieved if the cells concerned have presented to them the toxins in a graduated scale, beginning with toxins of a low degree of virulence and ending with those of a high degree of virulence, in this resembling other kinds of cells when concerned with other deleterious influences—for instance, the cells concerned when nicotine is taken into the system, which are able through habituation to tolerate without injury enormously increased doses. But while there is this general resemblance in the reactions induced by graduated toxins and graduated deleterious influences of other kinds there is a very important difference—viz., that in the presence of large doses of nicotine, arsenic, opium, &c., smaller doses add to the effect of the larger, whereas in the presence of virulent toxins, less virulent toxins do not add to the effect of the former, but, on the contrary, often induce a protective reaction against them. This, for example, we find is the case when attenuated injections from a series of drying infected cords are made into an animal suffering from rabies, in which disease there is present a microbe that produces toxins of such extreme virulence that normally no reaction is possible against them any more than against fatal doses of arsenic, opium, &c., so that the infected animal invariably perishes except the protective injections be made. The explanation of this remarkable phenomenon is probably to be found in the fact that while larger and smaller doses of arsenic, opium, nicotine, &c., are but degrees of the same thing—are but the same thing in different amounts and degrees of concentration—stronger and weaker toxins are not the same thing in different amounts and degrees of concentration, but strong toxins differ somewhat in kind from the weak toxins of the same disease, are probably of a somewhat different chemical constitution, and therefore while moderate heat, friction, fatigue, or doses of nicotine, &c., in the presence of greater heat, friction, fatigue, or doses of nicotine, &c., cannot inure the cells concerned to the action of the latter, the weaker toxin can sometimes, even in the presence of the stronger when these are not too concentrated, inure the cells concerned to the action of the latter, as in the case just cited of an individual already infected with rabies when attenuated toxins are introduced from a slowly drying cord in an early stage of the disease. At a later stage, when the strong toxins are more concentrated, it is useless to inject the weaker, for the poisoned cells are then unable to react and the animal perishes. This view is confirmed by a study of other diseases. In diphtheria, for instance, the pathogenic micro-organisms are limited to a small area of the surface; the toxins are, therefore, in the earlier stages at least, very dilute in the blood, and as a consequence it is often possible to introduce attenuated toxins with advantage, whereas in small-pox, in which the micro-organisms presumably pervade the whole body and the toxins are from an early period concentrated, it is useless to vaccinate after the first symptoms of the disease have appeared.

Apparently, then, acquired immunity consists essentially of an acquired power of tolerance, by virtue of which the cells concerned are able to perform their functions in spite of the presence of toxins. In the case of the cells specially concerned in zymotic diseases—i.e., those concerned in the destruction and removal of the pathogenic micro-organisms and their toxins—this acquired power enables them the more readily to produce the two or more digestive bodies inimical to the ferments and their toxins. But if an animal which has not acquired immunity (in the case of diseases against which permanent immunity may be acquired), or which has lapsed its acquired immunity (in the case of diseases against which permanent immunity cannot be acquired), be infected, then the cells concerned being poisoned may not react at all—i.e., may fail to produce their digestive bodies, when the proliferation of the invading microbes and the elaboration of their toxins will continue unchecked, and the animal will perish; on the other hand, in an animal which has not acquired immunity, or which has lapsed its immunity, the inborn powers of resistance of the cells may be, and is, as regards most animals in relation to most diseases, so great that they are able to produce the digestive bodies to some extent from the first in spite of the presence of the toxins, and therefore most animals are capable of recovering from most of the diseases to which they are liable. Digestion—i.e., attenuation—of the toxins then occurs, till in time there are present in the animal's blood toxins in all stages of digestion, from virulent toxins newly produced, and hardly affected by the enzymes, to toxins long produced, and so enfeebled as scarcely to deserve the name; and, as reasoning by analogy we may suppose, *up that graduated scale it is probable the cells of the animal react till complete immunity is attained*, just as the cells of an animal affected by rabies and anthrax react when treated to the less finely graduated toxins provided by Pasteur's treatment.

Moreover, if the blood serum of such an animal be removed and injected into a susceptible subject, either one not yet infected, or, if infected, one the cells of which are not poisoned beyond the power of reaction, this second animal also will thereby be provided with a means of achieving immunity. If he be not infected the altered toxins will provide him with a scale of graduated poisons up which his cells may react towards complete immunity, the completeness of the immunity acquired by him being proportionate to the virulence of the toxins at the more poisonous or least digested end of the scale. If he be already infected, not only will the injection provide him with a scale of graduated toxins, but it will also provide him with digestive bodies wherewith to attenuate the toxins which are then being elaborated by the micro-organisms infecting him. But of course the blood serum of an animal which has been infected and is recovering from the disease will be infinitely inferior in curative and immunising power to the serum of an animal into which the large quantities of toxin (elaborated in an artificial medium) have been injected in oft-repeated doses extending over a length of time, since in the latter case the quantity of attenuated toxins and digestive bodies will naturally be much greater than in the former. It further follows that, if we mix toxins with fresh antitoxic serum *in vitro* at a suitable temperature and for a sufficient length of time, the digestive bodies present in the latter will attenuate the former, and, therefore, that much larger doses of toxins can be administered without death in this way to a susceptible animal than in any other. Professor Fraser contends that, since antitoxic serum when mixed with toxins *in vitro* "neutralises" the latter more effectually after twenty minutes' contact than after contact of five minutes, proof is thereby supplied or a probability raised that such a neutralisation is a chemical one in the sense meant when we say that an acid is neutralised by a base; but surely when we remember the comparative rapidity of chemical and the comparative slowness of physiological reaction the probability is that we have here to deal with a digestive process rather than a mere chemical combination, a probability immensely strengthened by the consideration already dwelt upon that it is hardly likely that the animal body is a magic bottle producing at need the right toxins on the right occasion.

Various other considerations lend strength to the belief that acquired immunity against any disease depends essentially on a gradual habituation to its toxins, or an increased power of physiological resistance, as a result of which cells are enabled to perform their functions in spite of the presence of the toxins (which indeed do then but stimulate the cells specially concerned—i.e., those which produce the digestive bodies), not on the production of chemically antagonistic substances; and further that the persistence of immunity depends on the persistence of this power, not on the continued persistence within the system of antidotal substances, whether chemical (in the narrow sense) or digestive. For instance, it was found by Rox and Vaillard that, if too large or too frequent doses of tetanus toxin are injected into the horse, the antitoxic powers of the serum disappear for a time, and the serum actually becomes toxic; yet the horse manifests no symptoms of tetanus, as it would did immunity depend on the production of chemically antagonistic substances and not on a habituation to the poison. In this case it is evident that the cells of the horse are unable to produce digestive bodies fast enough to quickly attenuate the excessive quantity of toxin. Again it was found by Buchner that a mixture of toxin and

antitoxin—e.g., that of tetanus—in a proportion harmless to an animal of one susceptible species—e.g., a mouse—is still toxic to a weaker animal of the same species or to an animal of a more susceptible species—e.g., a guinea-pig—which could not be the case did the antitoxin contain substances which neutralised the toxin; whereas, if immunity depends immediately on a physiological, not on a chemical, reaction, even an attenuated toxin may be fatal to a very susceptible animal; an inference corroborated by the fact that a non-susceptible animal may be rendered susceptible by influences—e.g., cold or starvation—which lower the vitality.

But, perhaps, the most beautiful and convincing proof is supplied by the study of syphilis, a disease against which immunity may be acquired, but which, owing to the feebleness of the toxins (in this approaching tuberculosis and leprosy), yet persists long enough in a woman to cover the entire period of pregnancy. Normally, as we know, there is no connexion between the placental blood-vessels of a mother and those of her fœtus. But they are in close apposition, and are very thin-walled, so that while solids (e.g., the microbes of disease) are normally stopped, fluids with gases and solids (e.g., toxins) in solutions pass from one to the other by diffusion. Under abnormal circumstances (e.g., during disease) the continuity of the vessel-walls may be broken, and then solids as well as fluids pass from one to the other. It can hardly be doubted that this is what commonly happens in syphilis, and therefore a syphilitic mother very generally bears a syphilitic child. But when in rare cases the continuity of the vessel-walls is not broken, when a syphilitic mother bears a healthy child, or when, as more commonly happens, the healthy partner of a syphilitic father is delivered of an infected child, then is seen a most instructive phenomenon—the healthy individual is seen to be immune to the disease, for such an infant does not acquire the disease when suckled by his infected mother, nor, on the other hand, as Colles proved, does a healthy mother contract the disease when suckling her infected child, though other women do. Here during gestation toxins, passing from the infected to the non-infected individual, inure the cells of the latter to resistance, and as a result they destroy the pathogenic micro-organisms, if at any future time, in the act of sucking or of giving suck, they find entrance. But the children born of a mother who has recovered from syphilis, and who is immune, are not themselves immune, as are the healthy children born to her during her illness. Whence it follows that her continued immunity is not due to the presence of chemical antidotes or digestive bodies; for if it were her offspring would continue to be born immune, just as they did (if uninfected) when she was ill. Her continued immunity is plainly due to the fact that her cells do not lapse the training they received when she was suffering from the disease.

In connexion with syphilis it would be interesting to seek the explanation of some instructive phenomena which often occur in the inherited form of that disease. If a man contracts syphilis then, after a certain number of years, of which the limit has been set at five, he ceases as a rule to be infective to a woman, but for very long after he may have offspring who exhibit all the signs of very virulent infection. If a woman contracts syphilis, then, like a man, she also ceases after a limited time to be infective to another adult, and not only this, but, unlike the man, she ceases also to be infective to her children (Diday's law of decrease). Speaking only in general terms and without regard to the numerous exceptions, which doubtless depend on differences in resisting power in the offspring, the children earliest born to her after infection suffer in the absence of treatment most severely from the disease, those later born less severely, till at length, if she continue to bear children, the latest born do not suffer at all. Her disease tends at first to result in abortions and miscarriages, then in the birth at term of one or more dead children, then in one or more children who survive their birth for a space, next in children who survive, but show signs of disease, and, lastly, in children who show no signs of infection. If such a woman mate with an infected man this law still holds, for which reason the children of a married couple who have the disease, as a rule, even in the absence of treatment, show less and less signs of it, whereas a woman not previously infected may bear grievously infected children to a father who has long ceased to exhibit signs of the disease. Moreover, if a non-infected mother bear infected children, who live, to a diseased father, her children also show less and less signs of it, until at length they show no signs at all.

If I am right in the foregoing part of this paper, acquired immunity to syphilis, like acquired immunity to other zymotic diseases, must depend on an acquired power of tolerating the toxins, the cells concerned (especially those concerned in the elaboration of the digestive bodies) being able to perform their functions in spite of the presence of the toxins, in consequence of which the micro-organisms must gradually be destroyed, or if some of them survive they must survive in the unfavourable environment in a highly resistant, and, therefore, judging by analogy, a very harmless form—e.g., as resting spores. Now we have evidence that pathogenic micro-organisms do not induce disease in susceptible animals when the number in which they find entrance sinks below a certain minimum, which minimum doubtless varies with the species of the invading microbes, with the species of the animal attacked, and even with each individual of the latter. Thus it has been found that to kill a rabbit by artificial infection at least 16 000 virulent anthrax bacilli must be introduced, a lesser number, if introduced, perishing and the rabbit acquiring greater resisting powers (Lubarsch). Again 1 c.c. of a fresh broth culture of bacillus pyocyaneus will infallibly cause fatal disease in a rabbit, which, however, will survive and acquire increased resisting power from the injection of a quarter of that quantity. But immature animals are less resistant than adult animals of the same species;[10] for instance, young guinea-pigs succumb more easily to attenuated anthrax bacilli than do older animals. Presumably, therefore, young animals are capable of being infected by a smaller quantity of microbes than adults, and for this reason it probably is that a father may infect his offspring with syphilis at a time when few microbes survive in him, and long after he has ceased to be infective to a woman; and this readier infectibility of the young probably suffices also to explain the fact that while it is rare for a diseased woman to bear a non-infected child, it is much more common for a diseased child to be born of a healthy mother. Moreover, both the ovum and the spermatozoon are unicellular animals; in them there is no differentiation of tissue for the performance of different functions; in them, therefore, are no cells which can react to the toxins, and therefore neither ovum nor spermatozoon has the power of resisting the microbes, or in other words of acquiring immunity. This power, like the power of acquiring all other acquirable traits, arises later in their cell-descendants when these latter have undergone morphological and physiological specialisation and differentiation into skin, muscle, gland, nerve, phagocytic and other cells. Hence it follows that a man can never confer immunity on his children, for though his spermatozoa be bathed in toxins they cannot react, since the necessary machinery is wanting. So, also, a woman who has recovered from syphilis or any other disease cannot, then, confer immunity on her non-infected children, for though during her illness her ova are bathed in toxins, yet in them also the machinery for reaction is wanting. But if a woman become pregnant during her illness, then in her embryo (that mass of the adherent cell-descendents of her ovum) there are present differentiated and specialised cells, which, like those of her own body, have the power of acquiring various traits, among others that of reacting to the toxins of this or that disease. And, therefore, while a man can never confer immunity on his children, or a woman on children born to her before infection or after recovery, a woman can confer immunity on offspring of which she is pregnant during her illness, for in the latter case the necessary machinery for acquiring immunity is present—i.e., the toxins passing from the mother to the embryo may induce a protective reaction in the cells of the latter, especially in those concerned in the elaboration of the digestive bodies.

But syphilis is a disease of long duration; in other words, immunity against it is only very slowly acquired—that is, the cells only very slowly acquire the power of tolerating the toxins, and of producing the digestive bodies undeterred by their presence. It follows that if a woman become pregnant during the earlier stages of her illness, even if the microbes be stopped in the placenta and the child is not affected, there will pass from her to the embryo toxins which are little or not at all attenuated, and therefore since young individuals are in general less capable of resisting zymotic diseases than the older members of their species the embryo perishes, and the mother aborts or miscarries. But as her

[10] For the biological explanation of this see The Present Evolution of Man, p. 269.

disease progresses the mother gradually acquires more resisting power; her cells become more and more tolerant of the toxins, and therefore more and more capable of producing digestive substances which attenuate and destroy the toxins, and therefore up to the time of her recovery she becomes more and more capable of conferring immunity on her offspring, since as time lapses there pass from her to the child toxins in greater and greater states of attenuation. Then, even if the child be infected (as usually occurs), the digestive substances he receives through the placenta from the mother tend to destroy the micro-organisms and attenuate the toxins produced in him. At length, before recovery and immunity are achieved, a time arrives, the advent of which varies in different individuals, when the digestive substances produced in the infected mother are of such potency or in such abundance that the toxins are so much attenuated as not to destroy the child, who is then born alive, and he may be of a fat and healthy appearance.[11] In him are present digestive substances, attenuated toxins, and the micro-organisms of the disease. Frequently in such a child the disease reasserts itself, the child begins to pine and ere long perishes. The only feasible explanation of this phenomenon appears to be the following: that the digestive bodies from the mother attenuate the toxins sufficiently to protect the child from injury, but not sufficiently to bring about in the young individual a protective reaction, which is then as impossible to him as a protective reaction to the non-attenuated toxins of rabies is to an adult individual. Therefore, after birth, when the digestive bodies derived from the mother are exhausted, the toxins produced by the microbes within the child, and not now altered, cause his death. But in a still later stage in the mother's disease the toxins are so much attenuated that the cells of the child are able to react, and, therefore, though after birth signs of the disease may be seen, he recovers and is afterwards immune. Still later, when the mother has recovered, when her cells have acquired the power of resisting the toxins and she is immune, the child can acquire from her neither the disease nor the immunity, since toxins, attenuated and otherwise, no longer pass from the one to the other.[12]

On the other hand, if a healthy mother bear diseased children to an infected father we should, if our theory be correct, expect to find (and actually we do find) that each succeeding infant exhibits less and less signs of the disease, and this notwithstanding the fact, other things being equal, that the last child infected by a diseased father tends, when born to a different woman who has not previously suffered from the disease or borne infected children, to have the complaint as deeply as the first; in other words, a woman who has once borne an infected child tends to endow succeeding infected children with greater and greater powers of resistance, the greater powers of resistance being clearly derived from her and not from the father, since other women who have neither themselves been infected nor have borne infected children may bear deeply diseased children to the same father. Here in the case of the former woman toxins from each infected child pass into the circulation of the non-infected mother, inducing a more and more perfect reaction in each succeeding pregnancy; and therefore in each succeeding pregnancy there are elaborated by her more and more digestive bodies, which at length attenuate the toxins so thoroughly that the cells of the child are able to react and the child survives, instead of perishing in intra- or extra-uterine life like its predecessors. In this case toxins pass from the child to the mother, while from the mother to the child pass attenuated toxins and digestive substances.

It follows as a corollary that, if a mother who has acquired immunity either by personal disease or by bearing infected children become pregnant of an infected embryo, she will tend to confer immunity on the embryo, since the elaboration of toxins in the latter will tend to call forth the elaboration of digestive bodies in her; but if the embryo be not infected then immunity will not be conferred, for in such a case no toxins from the child will call forth the digestive bodies from the mother, and these, as we have seen, do not persist in the body in the absence of appropriate stimulation—i.e., in the absence of toxins—but after a space disappear, leaving behind only the power of tolerating the toxins, only the power of readily producing digestive bodies when stimulated by the toxins.

[11] Be it remembered that here I write in general terms only. As is well known, living children may be born to a woman in all stages of her disease, but abortions and miscarriages are most frequent during the earlier stages, and of such children as are born alive the vast majority perish. It is very significant, moreover, that hand-fed syphilitic children are more liable than those who are breast-fed to marasmus (Coutts). It is known that "antitoxins" are secreted in the milk and other secretions, and Ehrlich actually believes that the hereditary transmission of acquired immunity is due to the presence of large amounts of antitoxins in the milk.

[12] I cannot set forth positive evidence proving that the children born of a mother received from syphilis and immune to it are not themselves immune, for I am not aware that any observations bearing on the subject have been published. Nevertheless, reasoning from the analogy of other diseases, we may be sure that they are so, for it is a matter of common knowledge that the children of mothers recovered from and immune to pertussis, measles, scarlet fever, small-pox, typhoid fever, typhus fever, &c., are not immune; on the other hand, the children of mothers who during the pregnancy have suffered from small-pox have been found to be immune; and Chauveau claims to have proved that the offspring of sheep suffering from anthrax have, under similar circumstances, exhibited immunity against that disease. I myself hope soon to publish some observations proving that if a mother be vaccinated during the later months of pregnancy immunity against varicella, and therefore against variola, is thereby conferred on her infant. If I am right as to this—and I cannot doubt that I am—the matter may be of some practical importance, since a single vaccination would then protect two individuals, since a strong healthy woman is better fitted to undergo the illness than a delicate young infant, and since many mothers would prefer to take their child's trouble on their own shoulders. The usefulness of such vaccination would, however, be limited, since it would be available in most instances for one pregnancy only, and in many cases not even for that. I should like to add that I would be extremely grateful to any readers if they would, as opportunity offered, perform this experiment and let me know the result.

LITHOLAPAXY IN THE CIVIL HOSPITAL, HYDERABAD, SIND.

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I SUBMIT herewith a list of 204 further cases of litholapaxy performed by me at Hyderabad, making with the 200 cases published in THE LANCET of Oct. 10th, 1896, a total of 404 cases—385 urethral and 19 perineal—between Feb. 1st, 1896, and Feb. 23rd, 1897. I am well aware that there is nothing very unusual in these figures, large as they may appear to British surgeons, and I publish them, firstly, because I believe that enough is not known at home of the nature and amount of surgical work in India, and, secondly, because I understand that the operation of litholapaxy is, after all that has been said and done, still to a large extent under trial in the mother country. I have purposely given somewhat fuller remarks in the list now published as compared with those made in my former communication, and these leave but little for me to add.

It will be seen that I have comparatively seldom had recourse to Keith's operation, not that my appreciation of its value has in any way lessened, but that, having procured for myself one of Weiss's No. 5 fenestrated lithotrites—Keegan's pattern—I have since then only found one case in which the infantile urethra was too small to admit of the performance of the ordinary operation therewith. In such a case the choice of operation, I take it, will be between suprapubic lithotomy and Keith's operation the stone be at all large, and I believe that when, or as soon as, the latter operation is known it will be the one adopted in most, if not in all, cases of this kind. In the case of a small stone Keith's operation, if performed without a hitch, leaves the urethra after operation practically intact (see remark to Case 401 in the accompanying table). Hence I believe that when either (1) no sufficiently large instrument or (2) no instrument for crushing purposes can be introduced into the bladder Keith's operation is indicated; while at the same time I opine that a surgeon armed with Weiss's No. 5 fenestrated lithotrite, made on Keegan's pattern, will but seldom meet with such an instance among his infantile cases.

The last case in the list, No. 404, is a good instance of what may be done with large instruments in the case of boys where the calculus is large enough and hard enough to render an attempt at crushing with a lithotrite that would pass per urethram one fraught with danger to the patient, the instrument, or both. I have given at the foot of the table the summary of results, &c., on the same lines as

A SECOND SERIES OF LITHOLAPAXY OPERATIONS (204) PERFORMED IN THE CIVIL HOSPITAL, HYDERABAD, SIND.

Number.	Caste.	Sex.	Age.	Date of operation.	Size of lithotrite.	Size of evacuating catheter.	Number of times introducted.	Duration of operation in minutes	Weight of stone.	Days in hospital.	Result.	Remarks.
				1896.								
201.	Mus.	M.	3	July 13th	8	8	2	15	12 gr.	1	R.	Evacuation delayed by lodgment of fragment in cannula.
202.	Mus.	M.	4	,, 14th	8	8	2	15	1 dr. 22 gr.	1	R.	This calculus should not have necessitated a second introduction of lithotrite.
203.	Mus.	M.	17	,, 14th	12	16	1	15	1 dr. 40 gr.	2	R.	An easy operation; succeeded by priapism, almost continuous for 36 hours.
204.	Mus.	M.	9	,, 15th	8	8	1	11	2 dr.	2	R.	Micturition difficult for 12 hours after operation.
205.	Mus.	M.	48	,, 15th	12	16	1	10	1 dr. 40 gr.	2	R.	—
206.	Mus.	M.	5	,, 15th	8	8	1	9	2 dr.	1	R.	Operation easy and rapid.
207.	Mus.	M.	4	,, 16th	8	8	2	9	40 gr.	1	R.	Ditto.
208.	Mus.	M.	48	,, 16th	16	16	4	22	3 oz. 2 dr.	5	R.	A largish stone in a very emaciated subject. Some cystitis.
209.	Hindu	M.	5	,, 17th	8	8	2	9	1 dr. 50 gr.	2	R.	A single fragment escaped detection, and necessitated second introduction of lithotrite.
210.	Mus.	M.	40	,, 17th	12	16	2	11	3 dr. 30 gr.	2	.	—
211.	Hindu	M.	3	,, 17th	6	8	1	1	10 gr.	1	R.	Soft stone crushed by one turn of lithotrite and evacuated instanter.
212.	Mus.	M.	30	,, 17th	12	16	1	3	1 dr. 30 gr.	1	R.	Operation easy and rapid.
213.	Mus.	M.	3	,, 22nd	6	8	1	7	13 gr.	1	R.	Evacuation at first unsatisfactory.
214.	Mus.	M.	3	,, 23rd	6	8	1	5	13 gr.	1	R.	—
215.	Hindu	M.	4	,, 23rd	6	8	1	6	10 gr.	1	R.	—
216.	Mus.	M.	7	,, 24th	8	12	2	14	1 dr. 50 gr.	1	R.	Evacuation materially hastened by use of large cannula.
217.	Mus.	M.	32	,, 28th	12	8	2	8	3 dr. 12 gr.	2	R.	—
218.	Mus.	M.	4	,, 30th	6	8	1	6	40 gr.	1	R.	—
219.	Mus.	M.	3	,, 31st	6	8	2	9	36 gr.	2	R.	—
220.	Mus.	M.	5	Aug. 1st	8	8	2	10	1 dr. 6 gr.	2	R.	—
221.	Mus.	M.	5	,, 1st	8	8	1	8	40 gr.	1	R.	
222.	Mus.	M.	48	,, 2nd	12	16	1	10	3 dr. 10 gr.	2	R.	Operations simple and rapid.
223.	Mus.	M.	5	,, 3rd	6	8	2	11	3 dr.	1	R.	
224.	Mus.	M.	4	,, 3rd	6	8	2	8	20 gr.	1	R.	
225.	Mus.	M.	78	,, 3rd	12	16	2	23	7 dr.	4	R.	A very unpromising subject who did well.
226.	Mus.	M.	50	,, 7th	12	16	2	16	1 dr. 30 gr.	3	R.	Slight difficulty in micturition for 24 hours after operation.
227.	Mus.	M.	9	,, 7th	8	8	2	19	1 dr. 40 gr.	2	R.	—
228.	Mus.	M.	8	,, 7th	6	8	1	11	1 dr.	2	R.	—
229.	Mus.	M.	8	,, 7th	6	8	1	5	10 gr.	3	R.	Slight œdema of prepuce.
230.	Mus.	M.	3	,, 8th	6	8	1	6	1 dr. 30 gr.	1	R.	—
231.	Hindu	M.	2½	,, 9th	6	6	1	3	10 gr.	1	R.	—
232.	Mus.	M.	70	,, 9th	12	16	2	15	3 dr. 40 gr.	2	R.	Patient old, but evacuation easy and recovery symptomless.
233.	Mus.	M.	4	,, 10th	8	8	2	9	1 dr.	1	R.	
234.	Mus.	M.	25	,, 10th	12	16	1	5	20 gr.	1	R.	
235.	Mus.	M.	7	,, 10th	8	8	1	3	10 gr.	1	R.	
236.	Hindu	M.	4	,, 12th	6	6	2	9	30 gr.	1	R.	All simple cases.
237.	Hindu	M.	11	,, 12th	8	8	2	8	1 dr. 50 gr.	1	R.	
238.	Mus.	M.	34	,, 13th	12	16	1	14	7 dr. 15 gr.	1	R.	
239.	Mus.	M.	19	,, 13th	12	16	2	16	7 dr. 40 gr.	2	R.	
240.	Hindu	M.	55	,, 13th	12	16	3	30	1 oz. 4 dr.	3	R.	A flabby Hindu subject; slight cystitis.
241.	Mus.	M.	4	,, 14th	6	6	1	1	10 gr.	1	R.	Crushing instantaneous and evacuation immediate.
242.	Mus.	M.	10	,, 14th	8	8	3	23	5 dr. 30 gr.	1	R.	—
243.	Mus.	F.	70	,, 15th	12	16	2	25	3 dr. 10 gr.	2	R.	—
244.	Mus.	M.	3	,, 15th	6	6	1	1	10 gr.	1	R.	Small stone; crushed in one turn and evacuated immediately.
245.	Mus.	M.	35	,, 16th	12	16	2	10	2 dr.	1	R.	Similar to last, larger, but quite soft.
246.	Hindu	M.	4	,, 16th	6	8	2	14	50 gr.	2	R.	A small but rather hard calculus.
247.	Hindu	M.	2½	,, 17th	6	8	1	8	45 gr.	1	R.	Practically the same as No. 244, done on 15th.
248.	Mus.	M.	4	,, 18th	8	8	3	28	2 dr.	2	R.	—
249.	Mus.	M.	30	,, 19th	12	16	2	11	5 dr. 20 gr.	2	R.	—
250.	Mus.	M.	2	,, 19th	4½	5	1	2	10 gr.	1	R.	Another rapid operation, in which a new small lithotrite was first used.
251.	Hindu	M.	8	,, 19th	8	8	2	14	3 dr. 30 gr.	1	R.	A simple operation of the ordinary type.
252.	Mus.	M.	4	,, 20th	4½	8	1	6	20 gr.	2	R.	Cannula used was unnecessarily large.

A SECOND SERIES OF LITHOLAPAXY OPERATIONS (204) PERFORMED IN THE CIVIL HOSPITAL, HYDERABAD, SIND—*Continued*.

Number.	Caste.	Sex.	Age.	Date of operation.	Size of lithotrite.	Size of evacuating catheter.	Number of times introduced.	Duration of operation in minutes.	Weight of stone.	Days in hospital.	Result.	Remarks.
				1896.								
284.	Mus.	M.	30	Aug. 20th	12	16	3	24	1 oz. 1 dr. 40 gr.	3	R.	Slight cystitis followed operation.
285.	Hindu	M.	2	,, 21st	4½	5	1	2	35 gr.	1	R.	Calculus larger than No. 250; rapidly crushed and evacuated by smaller instruments.
286.	Mus.	M.	60	,, 22nd	12	16	3	33	1 oz. 1 dr. 20 gr.	5	R.	An old man with an unhealthy bladder. Did well.
287.	Mus.	M.	40	,, 22nd	12	16	3	26	6 dr. 50 gr.	2	R.	—
288.	Mus.	M.	8	,, 22nd	6	8	2	14	1 dr.	3	R.	A hard stone. Some urinary irritation for 48 hours after operation.
289.	Mus.	F.	3	,, 23rd	8	8	1	5	40 gr.	2	R.	—
290.	Mus.	M.	34	,, 23rd	12	16	1	11	1 dr.	3	R.	—
291.	Mus.	M.	3	,, 23rd	4½	5	1	3	35 gr.	4	R.	Small fragment left behind; spontaneously voided on second day.
292.	Mus.	M.	48	,, 25th	16	16	2	10	1 oz. 40 gr.	3	R.	—
293.	Mus.	M.	28	,, 27th	16	16	1	3	20 gr.	1	R.	—
294.	Mus.	M.	42	,, 27th	16	16	2	9	1 dr. 30 gr.	3	R.	—
295.	Mus.	M.	50	,, 28th	16	13	2	16	1 dr. 50 gr.	1	D.	No difficulty in operation; but patient, who had a very foul bladder with stinking contents, never rallied, and died in 20 hours.
296.	Mus.	M.	30	,, 29th	16	16	1	5	2 dr.	2	R.	Operation simple; had an enormous spleen.
297.	Mus.	M.	25	,, 31st	12	16	1	3	55 gr.	1	R.	—
298.	Mus.	M.	65	,, 31st	16	16	1	5	1 dr. 43 gr.	2	R.	—
299.	Mus.	M.	7	,, 31st	8	8	2	8	25 gr.	2	R.	—
300.	Mus.	M.	4	,, 31st	4½	6	1	5	20 gr.	2	R.	—
301.	Mus.	M.	6	Sept. 1st	8	8	2	8	20 gr.	2	R.	—
302.	Hindu	M.	30	,, 3rd	12	16	2	10	4 dr. 15 gr.	2	R.	—
303.	Mus.	M.	8	,, 3rd	8	8	2	6	10 gr.	1	R.	A fragment overlooked necessitated second introduction of lithotrite.
304.	Mus.	M.	3	,, 5th	4½	5	2	8	1 dr.	2	R.	—
305.	Mus.	M.	32	,, 5th	16	16	2	14	1 dr. 53 gr.	3	R.	Slight urinary irritation following operation.
306.	Mus.	M.	25	,, 7th	16	14	2	16	4 dr. 40 gr.	3	R.	Ditto.
307.	Mus.	M.	43	,, 7th	16	14	1	7	3 dr. 35 gr.	2	R.	An easily crushed stone for its size.
308.	Mus.	M.	22	,, 7th	8	9	2	9	20 gr.	2	R.	Should not have necessitated second introduction of instruments.
309.	Mus.	M.	70	,, 7th	16	14	2	13	5 dr. 35 gr.	2	R.	—
310.	Mus.	M.	35	,, 7th	16	14	3	44	1 oz. 5 dr. 20 gr.	2	R.	A bulky stone.
311.	Mus.	M.	35	,, 8th	16	14	1	5	10 gr.	1	R.	Stone very small for an adult.
312.	Mus.	M.	60	,, 10th	16	14	2	20	7 dr. 50 gr.	2	R.	—
313.	Mus.	M.	6	,, 15th	8	8	3	18	2 dr. 51 gr.	1	R.	A large stone for the patient's age; did well.
314.	Mus.	M.	55	,, 16th	16	14	2	5	10 gr.	3	R.	Fragment overlooked; hence second introduction.
315.	Mus.	M.	60	,, 17th	16	14	2	21	4 dr. 10 gr.	3	R.	—
316.	Mus.	M.	8	,, 17th	8	8	2	16	2 dr. 30 gr.	5	R.	Fragment retained impacted in urethra; removed with forceps on third day.
317.	Mus.	M.	55	,, 22nd	16	14	3	43	4 dr. 20 gr.	3	R.	A hard stone.
318.	Mus.	M.	50	,, 25th	16	14	1	5	52 gr.	1	R.	A small calculus for a patient of this age; operation rapid.
319.	Mus.	M.	35	,, 26th	16	14	1	9	6 dr. 30 gr.	2	R.	Nothing unusual.
320.	Mus.	M.	10	,, 27th	6	7	2	16	3 dr.	2	R.	Ditto.
321.	Mus.	M.	24	,, 28th	16	14	1	4	4 dr. 10 gr.	2	R.	Ditto.
322.	Mus.	M.	30	Oct. 3rd	16	14	1	5	7 dr. 30 gr.	2	R.	Operation rapid and easy.
323.	Mus.	M.	40	,, 3rd	16	14	1	15	4 dr. 10 gr.	2	R.	Nothing unusual.
324.	Mus.	M.	20	,,	16	14	1	10	1 dr. 40 gr.	1	R.	Ditto.
325.	Mus.	M.	60	,, 4th	16	14	1	9	5 dr. 20 gr.	3	R.	A large prostate. Had some retention for first 24 hours.
326.	Mus.	M.	60	,, 5th	16	14	2	16	2 dr. 35 gr.	2	R.	Another large prostate, which, however, gave no trouble.
327.	Mus.	M.	50	,, 5th	16	14	1	14	4 dr. 50 gr.	3	R.	A hard stone. Some urinary irritation for first 24 hours.
328.	Hindu	M.	50	,, 6th	16	14	2	15	2 dr.	2	R.	—
329.	Hindu	M.	2	,, 7th	5	5	1	4	10 gr.	2	R.	—
330.	Mus.	M.	55	,, 7th	16	14	1	6	2 dr. 20 gr.	2	R.	—
331.	Mus.	M.	22	,, 7th	16	14	3	14	1 oz.	2	R.	—
332.	Mus.	M.	40	,, 9th	16	14	1	4	1 dr. 10 gr.	2	R.	—
333.	Mus.	M.	4	,, 9th	6	7	2	9	1 dr. 6 gr.	2	R.	—
334.	Mus.	M.	3	,, 15th	5	5	2	10	50 gr.	2	R.	Bladder very low for a child; stone hard.
335.	Mus.	M.	70	,, 15th	16	14 & 18	3	48	2 oz., 3 dr., 20 gr.	2	R.	A good-sized stone; very large prostate. Patient did very well.
336.	Mus.	M.	35	,, 16th	16	14	2	9	1 dr. 12 gr.	2	R.	—

A SECOND SERIES OF LITHOLAPAXY OPERATIONS (204) PERFORMED IN THE CIVIL HOSPITAL, HYDERABAD, SIND—*Continued.*

Number.	Caste.	Sex.	Age.	Date of operation.	Size of lithotrite.	Size of evacuating catheter.	Number of times introduced.	Duration of operation in minutes.	Weight of stone.	Days in hospital.	Result.	Remarks.
				1896.								
301.	Hindu	M.	5	Oct. 30th	4½	7	2	16	1 dr. 50 gr.	2	R.	—
307.	Mus.	M.	30	,, 30th	16	14	1	10	1 dr. 40 gr.	2	R.	—
308.	Mus.	M.	45	,, 30th	16	14	1	9	45 gr.	2	R.	Difficulty in finding fragments with lithotrite (too large).
309.	Mus.	M.	9	,, 30th	4½ & 6	7	2	14	1 dr. 40 gr.	2	R.	Lithotrite changed from No. 4½ to 6 as calculus was hard.
310.	Mus.	M.	8	,, 30th	4½	7 & 9	1	5	5 gr.	1	R.	Cannula changed from 7 to 9 to permit of passage of fragment without further crushing.
311.	Mus.	M.	3	,, 31st	5	5	1	3	40 gr.	2	R.	—
312.	Mus.	M.	18	,, 31st	16	14 & 18	3	38	1 oz. 6 dr. 20 gr.	3	R.	Temperature rose to 105·6° F. on second day, but fell at once; did well.
313.	Mus.	M.	5	,, 31st	4½	5 & 7	1	3	20 gr.	2	R.	Cannula changed for reason given opposite No. 310.
314.	Mus.	M.	20	Nov. 1st	16	14 & 18	2	9	5 dr.	2	R.	Ditto.
315.	Mus.	M.	3	,, 1st	4½ & 5	5	1	5	10 gr.	1	R.	A small but very hard stone.
316.	Mus.	M.	3	,, 1st	4½	5	2	4	45 gr.	1	R.	—
317.	Hindu	M.	30	,, 1st	16	14	1	9	1 oz. 50 gr.	2	R.	Operation easy and rapid.
318.	Mus.	M.	50	,, 2nd	16	14	2	24	1 oz. 5 dr.	3	R.	Operation, followed by atony of bladder for 36 hours.
319.	Mus.	F.	9	,, 3rd	4½	7	2	12	40 gr.	2	R.	—
320.	Mus.	M.	8	,, 3rd	4½ & 5	7	1	11	2 dr.	1	R.	—
321.	Mus.	M.	50	,, 3rd	16	14	2	18	5 dr. 40 gr.	2	R.	—
322.	Mus.	M.	30	,, 8th	16	14	1	5	25 gr.	1	R.	Two small calculi for adult patients.
323.	Mus.	M.	28	,, 8th	12	9	1	5	1 dr. 5 gr.	2	R.	
324.	Hindu	M.	13	,, 8th	16	14	2	30	4 dr. 12 gr.	3	R.	Temperature rose to 103·8° F. an hour after operation; did well.
325.	Mus.	M.	65	,, 8th	16	14	2	20	7 dr. 10 gr.	2	R.	—
326.	Mus.	M.	8	,, 8th	6	7 & 9	2	27	1 dr. 30 gr.	2	R.	—
327.	Mus.	M.	4	,, 9th	5	7	1	5	20 gr.	1	R.	—
328.	Mus.	M.	20	,, 9th	16	14	1	3	10 gr.	1	R.	Stone small and soft. Operation rapid.
329.	Mus.	M.	2	,, 10th	5	7	1	8	50 gr.	1	R.	—
330.	Mus.	M.	9	,, 10th	8	9	1	9	2 dr. 26 gr.	1	R.	—
331.	Mus.	M.	50	,, 10th	16	14	1	14	2 dr. 50 gr.	2	R.	Prostate large.
332.	Hindu	M.	30	,, 12th	16	14 & 16	2	24	1 oz.	2	R.	—
333.	Mus.	M.	60	,, 16th	16	14 & 16	2	34	7 dr. 35 gr.	5	R.	This old man had rigors, followed by a temperature of 104·4° F., and lost all control over his bladder for 36 hours, but eventually did well.
334.	Mus.	M	2	,, 23rd	5	5	1	2	5 gr.	1	R.	A rapid operation.
335.	Mus.	M.	32	,, 23rd	16	14 & 16	2	32	1 oz. 3 dr. 22 gr.	2	R.	Evacuation a little troublesome. Did well.
336.	Mus.	M.	4	,, 24th	4½ & 5	7	2	28	1 dr. 32 gr.	2	R.	—
337.	Hindu	M.	2	,, 25th	5	5	1	4	12 gr.	1	R.	A family of Marwaris from Jesulmir beyond the Registan Desert. No. 339 came for treatment of an ununited fracture, and finding the operation successful among his relatives volunteered the information that he, too, had a stone.
338.	Hindu	M.	3	,, 26th	5	5	1	5	17 gr.	1	R.	
339.	Hindu	M.	10	,, 26th	8	7 & 9	2	14	2 dr. 30 gr.	2	R.	
340.	Hindu	M.	55	,, 29th	16	14 & 16	2	12	3 dr. 30 gr.	2	R.	
341.	Mus.	M.	50	Dec. 3rd	16	14 & 16	2	10	1 dr. 30 gr.	1	R.	—
342.	Hindu	M.	7	,, 4th	8	7	1	13	40 gr.	1	R.	—
343.	Mus.	M.	4	,, 4th	4½	5	1	5	22 gr.	1	R.	—
344.	Mus.	M.	8	,, 4th	8	7	2	18	1 dr. 10 gr.	2	R.	—
345.	Mus.	M.	8	,, 4th	8	7	1	16	1 dr. 15 gr.	1	R.	—
346.	Mus.	M.	8	,, 10th	8	7	1	4	5 gr.	1	R.	Lithotrite used unnecessarily large.
347.	Mus.	M.	3	,, 10th	5	5	2	11	57 gr.	2	R.	—
348.	Mus.	M.	9	,, 10th	8	7	2	22	4 dr. 10 gr.	3	R.	—
349.	Mus.	M.	60	,, 11th	16	14 & 16	3	45	2 oz. 2 dr.	4	R.	Patient weak. Operation prolonged, but result very satisfactory.
350.	Mus.	M.	55	,, 11th	16	14 & 16	1	12	3 dr. 10 gr.	2	R.	—
351.	Mus.	M.	34	,, 11th	16	14	2	24	5 dr. 30 gr.	2	R.	—
352.	Mus.	M.	40	,, 14th	16	14	1	11	2 dr. 10 gr.	1	R.	—
353.	Mus.	M.	50	,, 14th	16	14	1	3	12 gr.	1	R.	Lithotrite used was here again unnecessarily large.
354.	Mus.	M.	60	,, 15th	16	14 & 16	2	23	4 dr. 40 gr.	2	R.	—
355.	Mus.	M.	5	,, 15th	4½ & 6	7	2	20	2 dr. 30 gr.	1	R.	—
356.	Hindu	M.	6	,, 15th	5	5	1	4	5 gr.	1	R.	—
357.	Mus.	M.	24	,, 16th	16	16 & 14	3	30	6 dr. 50 gr.	2	R.	—
358.	Mus.	M.	5	,, 17th	4½	7	1	9	35 gr.	1	R.	—
359.	Mus.	M.	60	,, 18th	16	14 & 16	2	22	3 dr. 52 gr.	2	R.	—

A SECOND SERIES OF LITHOLAPAXY OPERATIONS (204) PERFORMED IN THE CIVIL HOSPITAL, HYDERABAD, SIND—*Continued*.

Number.	Caste.	Sex.	Age.	Date of operation.	Size of lithotrite.	Size of evacuating catheter.	Number of times introduced.	Duration of operation in minutes.	Weight of stone.	Days in hospital.	Result.	Remarks.
				1896.								
360.	Mus.	M.	9	Dec. 19th	5	7	1	2	5 gr.	1	R.	A rapid operation; stone small and soft.
361.	Mus.	M.	8 m.	,, 20th	4½	5	1	3	12 gr.	2	R.	Ditto.
362.	Mus.	M.	5	,, 20th	6	7 & 9	2	14	2 dr.	2	R.	—
363.	Mus.	M.	55	,, 20th	16	14	1	5	10 gr.	2	R.	Instruments used too large.
364.	Mus.	M.	75	,, 23rd	16	14 & 16	2	18	1 dr. 30 gr.	1	R.	—
365.	Mus.	M.	65	,, 23rd	16	14	1	14	3 dr.	2	R.	—
366.	Mus.	M.	30	,, 23rd	16	14	1	15	3 dr. 50 gr.	2	R.	—
				1897.								
367.	Hindu	M.	50	Jan. 3rd	16	14 & 16	1	10	55 gr.	1	R.	—
368.	Hindu	M.	4	,, 4th	5	5	1	5	12 gr.	1	R.	—
369.	Hindu	M.	34	,, 4th	16	14 & 16	1	13	4 dr. 20 gr.	2	R.	—
370.	Mus.	M.	4	,, 5th	8	7	2	16	15 gr.	1	R.	—
371.	Mus.	M.	32	,, 5th	16	14 & 16	1	5	1 dr. 50 gr.	2	R.	—
372.	Mus.	M.	3	,, 6th	4½	5	1	3	10 gr.	1	R.	—
373.	Hindu	M.	3	,, 8th	5	5	1	3	20 gr.	1	R.	—
374.	Mus.	M.	3	,, 10th	5	5	1	5	32 gr.	1	R.	—
375.	Hindu	M.	11	,, 10th	5 & 8	7 & 9	3	18	1 dr. 50 gr.	3	R.	Stone hard, necessitating change of instruments.
376.	Mus.	M.	2	,, 12th	4½ & 5	7	2	22	1 dr. 46 gr.	2	R.	—
377.	Hindu	M.	42	,, 14th	16	14	1	12	1 dr. 10 gr.	1	R.	—
378.	Mus.	M.	3	,, 15th	4½ & 5	5	3	20	1 dr. 13 gr.	3	R.	—
379.	Mus.	M.	5	,, 15th	5 & 8	7 & 9	2	14	55 gr.	2	R.	—
380.	Mus.	F.	5	,, 15th	8	9	3	24	1 dr. 30 gr.	2	R.	—
381.	Hindu	M.	9	,, 16th	8	9	2	15	4 dr.	2	R.	—
382.	Mus.	M.	10	,, 17th	8	9	2	14	1 dr. 40 gr.	2	R.	—
383.	Mus.	M.	50	,, 19th	16	14	2	15	1 oz.	2	R.	—
384.	Mus.	M.	7	,, 24th	8	9	2	14	2 dr. 30 gr.	1	R.	—
385.	Mus.	M	45	,, 24th	16	14	1	13	3 dr.	2	R.	—
386.	Mus.	M.	13	Feb. 2nd	5 & 8	7	1	15	2 dr.	1	R.	—
387.	Mus.	M.	3	,, 3rd	4½ & 5	5	2	18	1 dr. 15 gr.	1	R.	—
388.	Mus.	M.	45	,, 14th	16	14 & 16	2	27	4 dr. 20 gr.	2	R.	—
389.	Mus.	M.	4	,, 14th	5	5	1	3	20 gr.	1	R.	A series of 6 small calculi, each less than a drachm in weight, varying in age of patients from 2 to 34, and very greatly in difficulty. Nos. 391 and 394 were hard, though small, stones.
390.	Mus.	M.	8	,, 14th	5	5	2	16	50 gr.	2	R.	
391.	Mus.	M.	2	,, 14th	5	5	1	5	55 gr.	1	R.	
392.	Hindu	M.	3	,, 15th	5	5	2	9	50 gr.	2	R.	
393.	Hindu	M.	7	,, 15th	4½	7	2	14	20 gr.	2	R.	
394.	Mus.	M.	34	,, 16th	16	14	1	4	15 gr.	1	R.	
395.	Mus.	M.	50	,, 18th	16	14	1	5	1 dr.	1	R.	—
396.	Mus.	M.	8	,, 18th	4½	9	2	5	55 gr.	2	R.	A very hard stone.
397.	Mus.	M.	50	,, 18th	16	14	1	14	3 dr. 35 gr.	1	R.	—
398.	Hindu	M.	4	,, 20th	5	7	1	4	25 gr.	2	R.	—
399.	Hindu	M.	24	,, 21st	16	14 & 16	1	6	3 dr. 20 gr.	2	R.	—
400.	Hindu	M.	40	,, 21st	16	14 & 16	1	4	1 dr. 10 gr.	1	R.	—

PERINEAL LITHOTRITY.

				1896.								
401.	Mus.	M.	2½	July 23rd	4½	6	1	5	10 gr.	1	R.	Fluid injected into the bladder per urethram immediately after operation; returned clear by the same route.
402.	Mus.	M.	3	Sept. 7th	4½	7	2	10	½ dr.	2	R.	—
403.	Mus.	M.	5	,, 10th	4½	7	3	20	1 dr. 5 gr.	9	R.	Operation followed by fever, which subsided, and patient did well.
404.	Mus.	M.	7	Oct. 30th	16	14	3	30	6 dr. 5 gr.	5	R.	Stayed in hospital till fistula closed.

SUMMARY.—Mussulmans, 168; Hindus, 36. Males, 200; females, 4. Ages: under 1 year, 1; 1 to 3 years, 65; 6 to 10 years, 36; 11 to 15 years, 4; 16 to 45 years, 53; 46 to 55 years, 26; 46 to 65 years, 13; over 65 years, 6. Oldest, 78; youngest, 8 months. Lithotrite, average number of times introduced, 1·60. Average duration of operation, 12 minutes 19 seconds. Average weight of stone, 2 dr. 46 gr. (nearly). Average stay in hospital, 1·853 days. Mortality, 0·19 (nearly) per cent.

those given in my previous paper. They show some improvement in the averages of number of times the lithotrite was introduced, duration of operation, and stay in hospital in each case; but it will be seen that the average weight of the calculi dealt with is lower in this list, and a large number of cases of small stones in young children come to be dealt with very rapidly after some experience, and this will, of course, show itself in an average statement, somewhat obscuring the fact that large stones, if at all hard, will always take time to crush and evacuate. Thus in Case 208 the removal of a calculus weighing three ounces and two grains took as long as eighty-two minutes from the moment of introducing the lithotrite to that of withdrawing the cannula for the last time, while other very small soft calculi if found and seized at once were pulverised by a single turn of the lithotrite handle and evacuated within a couple of minutes.

Matlock Bath.

NOTES ON A CASE OF APPARENTLY INCURABLE BLINDNESS IN WHICH SIGHT WAS RESTORED.

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THE patient, a girl, twenty-two years of age, who was presented to the notice of the president and members of the Nottingham Medico-Chirurgical Society, on March 25th, 1897, came under my care in September, 1896. At that time she was quite blind, having bare perception of light with either eye. She had been in this condition for upwards of three years, during which period several ophthalmic surgeons had been consulted, with the result that she was declared incurable, and advised to enter an asylum for the blind without delay. "Is it any use going elsewhere for advice," she asked. "Not a bit! no one can do you any good!" Under these circumstances I told the friends that it would be hardly worth their while to incur the expense of a railway journey; but as an uncle of hers—formerly blind from detached retina, and who had been sent to me by Dr. Metcalf, of Lancaster—had regained his sight, they were very persistent, and I consented to receive her as an Eye Infirmary patient. On admission I found both pupils contracted, adherent to the capsule of the lens, and blocked by dense calcareous masses, while the eyes themselves were

Cataracta complicata accreta.

so shrunken and soft that minus three according to Sir W. Bowman's formula was barely sufficient to express their condition. I concluded that the opacity and calcareous degeneration of the lens—cataracta complicata accreta—was a secondary phenomenon; that sight was probably lost before the pupils were blocked; that there had been impairment of the circulation in the vessels of the uveal tract, liquefaction of the vitreous, and possibly also detachment of the retina in both eyes[1]—a diagnosis which was to some extent borne out by notes of the case which were kindly sent to me by Mr. Bickerton, of Liverpool, from which it appeared that she had originally suffered from cyclitis preceded by choroidal changes and complicated with facial paralysis. She had been for some time an in-patient in the ophthalmic wards of a general hospital before coming under Mr. Bickerton's notice, and was subsequently seen and prescribed for by other specialists. I treated her with constitutional remedies *secundum artem*, with the constant galvanic current, and sub-conjunctival injections, and, when the improved condition of the eyeballs and increased perception of light seemed to warrant the procedure, extracted both lenses with the capsule entire and without iridectomy. The operation—despite extensive adhesions and so many contra-indications and drawbacks—was perfectly successful, and she was very soon able to go about the crowded streets—even after nightfall and in the winter months—unaccompanied, to read the signs over the shop windows, and to enjoy a degree of freedom which was highly appreciated after having been led about for years. A continuance of the treatment, after recovery from the operation, was followed by daily improvement, until the death of a relative compelled her return home, since which time I have had letters from her as well written as any I am in the habit of receiving.

"Shall I ever see again?" is a pathetic query which is often addressed to us, and it is one which it is not so easy to answer as might *a priori* be supposed. I have patients who have recovered their sight after blindness of upwards of thirty years—even loss of perception of light is not always a contra-indication to treatment. Indeed, I have one patient from the Blind Asylum who recovered excellent sight by treatment alone, both for reading and distance, after prolonged loss of all perception of light; and it is quite certain that now and again apparently hopeless cases—such as the one I have recorded—may be restored to all the blessings attendant upon the exercise of that function without which life itself is worth little.

Nottingham.

[1] "Inflammation of the anterior portion of the uveal tract, and especially the ciliary processes—in other words, cyclitis, or degeneration of the vessels of the uveal tract—leads to impairment of the nutrient supply of the vitreous and altered consistency, liquefaction or synchisis, and the retina, losing the support of the vitreous, is apt to become detached."—Leber and Nordensen.

CONGENITAL LARYNGEAL OBSTRUCTION.

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THIS affection may be described as a form of persistent laryngeal obstruction commencing at, or soon after, birth and accompanied by a peculiar stridor. The affection is not very rare, but is probably often unrecognised, and there are but few references to it in medical literature. Dr. Lees has described a case as a peculiar form of obstructed respiration. Dr. Gee discusses some cases under the heading of "Respiratory Croaking in Babies," and the same affection is evidently referred to by Dr. Goodhart as "infantile laryngeal spasm," by Dr. Löri, of Pesth, as "clonic spasm of the glottis," and by Dr. Robertson as "posticus paralysis." Dr. Thomson, of Edinburgh, has written an admirable and full paper on the subject under the title of "Infantile Respiratory Spasm." Within recent years a few cases under various designations have been shown at medical societies, but so far as we are aware no contribution has appeared tending to the further elucidation of the subject. The pathology of the affection has never yet been definitely determined, and the importance of some of its symptoms is not fully recognised. We propose to give an account of the clinical signs and symptoms founded upon the observation of eighteen well-marked cases, to trace the progress of the patients, and to describe exactly the pathological condition of the larynx, which we believe to be the basis of the affection. For the notes of two of the cases we are indebted to our colleague, Dr. Leonard Guthrie.

Predisposing circumstances.—This subject formed part of our investigation, but we have not succeeded in eliciting any facts of importance. Inquiry has been made as to any hereditary tendency to this affection, or hereditary disease associated with it, as to whether any localities are specially

affected, and as to whether accidents during pregnancy were common, in all cases with a negative result. In no case had more than one member of the same family been affected. The firstborn did not appear to be more liable than the subsequent children. There was no evidence of the affection being in any way traceable to the nature of the confinement.

CLINICAL FEATURES.

1. *Date of onset.*—The stridor is usually observed at, or very soon after, birth. Its onset may be delayed until the end of the second week, but after that time its occurrence is rare. Of these 18 cases the stridor was noticed on the first day in 11, on the second day in 1, on the third day in 1, on the fourth day in 1, on the seventh day in 1, on the fourteenth day in 1, and in the third week in 2. It is probable that those cases in which nothing abnormal was observed until after the first week had a slight stridor at an earlier period, which might easily be regarded as the normal crowing of infancy, until its persistence and increase during the first weeks of life attracted more special attention.

2. *General health.*—As a rule medical advice regarding the infant was sought solely on account of the stridor. Many of the patients were well nourished and apparently in the best of health, and did not appear to be at all inconvenienced by the laryngeal obstruction. As regards associated illnesses, nothing definite or constant has been noted. Syphilis was probably present in one case, but not to a marked degree. In one case there was a history of convulsions, commencing on the eighth day and recurring at intervals until the end of the second month. A moderate amount of rickets was observed several times amongst the infants over three months of age, but not more frequently than is usual amongst hospital patients. Finally, anæmia was present in one patient, another suffered from marked constipation, and several were specially subject to bronchitis.

3. *Character of the stridor.*—Amongst the various descriptive terms applied by the mothers to the stridor there occur the following: "Like a hen," "like a chicken," "like a grunter," "purring like a kitten," and "like croup." Dr. Thomson says: "Inspiration begins with a croaking noise and ends in a high-pitched note; expiration is accompanied by a short croak when the stridor is loud, but at other times it is noiseless." This is a good description of a typical case, but many modifications and variations occur. Inspiratory stridor was always very much louder than expiratory. The variations in the pitch of the inspiratory stridor were striking, the note in some cases being deep, purring, growling, and in others high, clear, squeaking. The expiratory sound was sometimes of a nasal or pharyngeal character. The loudness of the stridor varied at times, and in almost all of the cases there were periods of complete intermission. The influences bearing on these alterations would appear to be as follows. When the breathing was regular and superficial the stridor was diminished or absent. This was observed usually when the child was asleep or was taken from a cold to a warmer atmosphere. When the breathing was irregular or deepened, the stridor was increased. This was observed when the child awoke from sleep, or was taken from a warm to a colder atmosphere, or was put in a cold bath, or was excited, or frightened, or crying, or coughing, or was being fed too quickly, or when dyspnœa was present, as in bronchitis. The cry and cough were always clear and natural, apart from intercurrent disease affecting the larynx.

4. *Signs of obstruction.*—1. Cyanosis may be, and in many of our cases was, entirely absent. Inquiry elicited the fact that eight of the patients had suffered from suffocative attacks, coming on sometimes when the infant was asleep and sometimes when awake, and accompanied by cyanosis and marked stridor. A condition of persistent cyanosis is very rare, but it was a prominent feature in the only fatal case we have met with. 2. Movement of the alæ nasi was not a marked sign, but there was usually some increase in movement when the respirations were deep and the stridor loud. Dr. Thomson noted the absence of this symptom in his cases. 3. Thoracic and abdominal retraction was present in all except the slightest forms of the affection, but, like the stridor, it was intermittent and varied in degree. The retraction may be visible at the episternal notch, at the supra-clavicular fossæ, along the ribs, more especially in the axillary region, and at the epigastrium. When the stridor was pronounced and had lasted for some months the boundaries of the chest became altered as in rickets. In several of the cases epigastric depression with laboured action of the abdominal muscles was a prominent feature. Even when the stridor was temporarily absent retraction was usually present, although to a less extent than when the breathing was noisy. 4. As a rule the lungs are not fully expanded, the breath sounds being feeble towards the bases, and râles or rhonchi being audible over those areas.

5. *Examination of the nose and pharynx.*—In none of the cases examined did we find the tonsils much enlarged or adenoid vegetations of any importance, and in none were there any of the symptoms usually associated with these affections. Our experience in this respect agrees with that of Dr. McBride, who examined some of Dr. Thomson's cases, and is at direct variance with that of Dr. Eustace Smith and Dr. Robertson, who apparently consider the presence of adenoid growths an important etiological factor in the affection.

6. *Examination of the larynx.*—After many attempts, most of which were unsuccessful, the following simple method was discovered, by means of which the larynx of the youngest infant could be quite readily and certainly seen without causing it any pain or inconvenience, and without the necessity of having recourse to anæsthetics. The infant being held in the usual position for laryngoscopy, the index finger of the left hand is passed into the mouth over the base of the tongue and the terminal phalanx hooked round the hyoid bone, which is by this means pressed well forward. The rest of the finger holds down the tongue out of the way, and, with the left thumb pressed up under the chin, serves to steady the infant's head. A small laryngeal mirror is now introduced in the usual way and the larynx comes readily into view. When the child was a little older and possessed teeth a copper spatula suitably bent with a small sharp curve at its end was used in place of the finger, and this instrument is also useful when the examiner's finger takes up too much room in the infant's mouth. The infant as a rule keeps the mouth wide open during the examination, but a gag might be necessary in some cases. This method was demonstrated at the meeting of the Laryngological Society of London in February, 1897. By this means the larynx was examined in six cases—all those seen in the last year—and in all of them the following characteristic appearances were found. The epiglottis was sharply folded on itself, the two lateral folds being in close apposition and in some cases in contact. The aryteno-epiglottic folds were approximated, and thus the upper aperture of the larynx was reduced to a long narrow slit. The thin folds bounding this aperture seemed quite flaccid and flapped to and fro on respiration. The inspiratory column of air striking down on these folds drove them together, and on expiration they again separated. In some cases, the "purring" ones, the coarse vibrations of these folds could be distinctly seen. In only a few of the cases could a view of the vocal cords be obtained. They appeared quite white and normal, as the symptoms would have led one to expect.

7. *Progress.*—In the case of a child otherwise healthy the stridor tended to increase in loudness for some weeks or months after birth, then to continue more or less stationary until the eighth or ninth month, and then gradually to diminish until it was lost about the end of the eighteenth month or second year. After that period it was occasionally represented by a short crow or croak under excitement or any action causing long-drawn inspirations. One patient was seen for the first time when ten weeks old and presented a typical stridor, loud and persistent. This condition continued with little alteration until the twelfth month, when the stridor began to be less loud and less frequent, until at the end of the second year it was observed only when the child was "out of breath," or had a cold, or was straining at stool. When last seen, at the age of six years, she was in robust health, the lungs and heart were normal, and the chest showed no signs of deformity. On laryngoscopic examination the epiglottis was seen to be folded laterally on itself and the aryteno-epiglottic folds approximated. These folds closed inwards when the child drew a hurried breath, and a slight stridor was produced. The vocal cords moved freely. Other cases have been observed up to the ages of from two to two and a half years, and the progress has been similar to that above described, the stridor reappearing only under exceptional circumstances and the malformation of the larynx above described persisting.

PATHOLOGY.

Many divergent opinions have been expressed as to the cause of the obstruction. Dr. Lees has described the larynx

in one case which proved fatal from diphtheria. He found the epiglottis folded on itself and the aryteno-epiglottic folds in contact, the upper aperture of the larynx being reduced to a narrow slit with two minute openings, one between the folds of the epiglottis and the other between the arytenoid bodies. Dr. Gee thought the stridor was produced in the pharynx. Dr. Löri, of Pesth, in a series of cases observed a constantly recurring clonic spasm of the vocal cords. Dr. Robertson believed the affection to be posticus paralysis, due to a reflex disturbance of the nervous mechanism of the larynx set up by the presence of post-nasal adenoid growths. Dr. Eustace Smith has accepted this hypothesis and refers to cases of his own in support of it. Dr. Goodhart accepts Dr. Lees' observations, although he had previously thought that the affection depended upon a valvular action of the upper aperture of the larynx due to the flaccidity of these structures in infants. Dr. Thomson advances ingenious arguments in favour of its being a respiratory spasm, the muscles of respiration being imperfectly coördinated. He considers it to be a developmental neurosis and analogous to stammering. Dr. McBride and others who took part in the discussion on Dr. Thomson's paper also considered the affection to be a glottic spasm. From our own observations we are convinced that the affection depends on a valvular action of the upper aperture of the larynx, a falling inwards of its lateral walls during inspiration, dependent partly on a peculiar congenital malformation of the larynx and partly on the flaccidity of these parts in infants. The larynx described by Dr. Lees presents this deformity in a very marked and probably very rare degree. In all our cases a similar malformation was present, but without the associated valvular action of the laryngeal aperture it would not have been sufficient to produce obstruction. Further, we have shown that as the child grows the malformation remains, but the stridor passes off as the parts forming the superior laryngeal aperture become less yielding. The fact that the folds are wider apart at the commencement of inspiration and close during its course agrees well with the observation that the stridor becomes higher pitched at the end of inspiration—that is, when the chink is at its smallest. The flapping outwards also accounts for the diminution or absence of the stridor on expiration. The above described malformation of the larynx has persisted in our cases as long as they were under observation, in one case up to the age of six years, and it is met with occasionally in advanced life, although we have no knowledge if such cases suffered from stridor in infancy. This observation contradicts the objection which some might urge that the laryngeal condition above described was really the normal infantile type of larynx. Besides, one of us has systematically examined the larynx of every infant coming under his care during many months past and has never yet observed the malformation except in association with this affection.

It cannot be definitely decided that the vocal cords play no part in the affection—that there is not, in fact, in some cases bilateral abductor paralysis. But the above condition appears to us to account quite satisfactorily for all the observed phenomena without assuming the existence of an additional lesion. Further, in some of the older patients in whom the upper aperture of the larynx was larger the cords moved well and were seen to be fully abducted, yet in these cases also stridor occurred on exertion or during a quick inspiration, and was invariably associated with a falling inwards of the aryteno-epiglottic folds. The theory that the affection is in any way a spasm seems to us to be untenable in view of the appearances observed, nor does this theory satisfactorily explain the fact that in some cases the obstruction may persist constantly for months, and even during sleep, chloroform anæsthesia, &c.

DIAGNOSIS.

The affection is readily recognised by all who have once seen or heard it. The chief points to be attended to are the early onset, the peculiar characters of the stridor which occurs all day and even at night, with but short intervals of quiet breathing, the evidences of obstructed respiration—retraction of chest walls, &c.—without as a rule any apparent distress, and the loud, clear cry. In addition, we believe the above-described laryngoscopic appearances to be absolutely characteristic. Attention to the above points will be found sufficient to differentiate this affection from the following conditions which may more or less resemble it—(1) laryngismus stridulus and other forms of glottic spasm occasionally met with in connexion with post-nasal growths, excessive crying, &c.; (2) laryngitis in infants; and (3) papillomata of the larynx.

PROGNOSIS.

The prognosis is favourable provided that the infant's general health is good and the amount of laryngeal obstruction is moderate. In the case of infants who are delicate the obstruction to the breathing will probably be an additional factor in retarding the normal growth and development, and will predispose to pulmonary affections from imperfect expansion of the lungs. An attack of acute illness affecting the respiratory passages, such as bronchitis or pneumonia or diphtheria, is more serious in the case of an infant thus affected than in ordinary cases. The possibility that the obstruction to the breathing may lead directly to death from suffocation must be kept in mind. The occurrence is probably a rare one, as we are not aware of any example of this which has been recorded and have only met with one case in our own experience. This was one of our earlier cases and occurred before we had recognised the nature of the pathology and the gravity of the affection. The patient was an infant, aged two weeks, who had been observed to breathe noisily since birth. The stridor had been increasing, and at times the child got black in the face. There was a well-marked persistent stridor, accompanied by slight blueness of the extremities, retraction of the lower costal region, and strong action of the abdominal muscles. A week later the condition was not much altered, but the signs of obstruction were more marked, the cyanosis having increased in the face and extremities. The child died at home the same night, the breathing getting gradually more laboured, the cyanosis deepening, and convulsions supervening half an hour before death. A necropsy, limited to the chest and abdomen, was made on the following day. The external appearances were those of a healthy, well-nourished infant. The heart and lungs were healthy. The thyroid and thymus glands appeared to be normal. The epiglottis was soft and curved inwards. On examination of the larynx, both macroscopic and microscopic, no structural change was detected. The abdominal organs appeared to be healthy. In another patient the stridor persisted unchanged until the age of twelve months, when bronchitis supervened, the child lost flesh, and died eight months later from pulmonary disease. A third case which terminated fatally was that of an infant presenting, at the age of seven weeks, a well-marked stridor, but only slight evidence of obstruction as manifested by costal retraction. At the age of nine months the stridor was distinctly less, but the child was rachitic and suffered from chronic bronchitis. When she was thirteen months old the stridor had almost disappeared, but she died six months later from pulmonary tuberculosis.

TREATMENT.

In the treatment of our earlier cases various drugs were employed with the view of testing some of the current theories as to the nature of the affection. Among these may be mentioned bromide of potassium and strychnia, which were given for considerable periods without producing any definite benefit. In the later cases our treatment has been based on the belief that the affection is really due to a mechanical obstruction to the breathing, and has therefore been directed to the maintenance of as sound a condition of general health as possible. Cod-liver oil and malt, careful dieting, and attention to the general hygiene represent the chief measures employed. It is important that care should be taken to avoid cold, and that catarrh arising in any part of the respiratory tract should be checked as soon as possible, as any additional obstruction to the breathing is serious. For this reason, also, rickets, if present, must be energetically treated. In cases accompanied by cyanosis or severe suffocative attacks the danger of fatal obstruction must be remembered and tracheotomy performed, or the patient placed in circumstances where it can be performed at once if necessary.

References.—Lees, Transactions of the Pathological Society of London, vol. xxxiv., p. 19; Gee, St. Bartholomew's Hospital Reports, vol. xx., p. 15; Goodhart, Diseases of Children, 1885, p. 251; Löri, Allgemeine Wiener Medicinische Zeitung, 1890, No. 49; Robertson, Journal of Laryngology, October, 1891; Thomson, Edinburgh Medical Journal, September, 1892; Eustace Smith, THE LANCET, May 25th, 1895, p. 1298, and June 8th, 1895, p. 1460.

VACCINATION GRANT.—Mr. F. N. Williams, public vaccinator for Brentford, has been awarded a grant of £29 5*s.* on the report of the medical inspector of the Local Government Board, being the fifth consecutive biennial award.

THE MECHANISM OF DEATH FROM CHLOROFORM.

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IN 1893 I described in a communication to the Society of Anæsthetists three cases of death from chloroform[1] in which the prominent symptom was vigorous respiration persisting after the pulse had become imperceptible. Comparing the symptoms in these cases with similar ones occurring respectively in death from sudden hæmorrhage, cardiac syncope, and peritonitis, I suggested the conclusion that these chloroform fatalities were due to anæmia of the respiratory centre produced by "failure of the circulation" from either vaso-motor paralysis or cardiac syncope, and not by primary paralysis of the respiratory centre. I used the term "failure of the circulation" as it did not commit me to any definite theory, my chief object at that time being to prove that death was not caused by primary respiratory paralysis. Since then I have met with three similar cases—one, happily, non-fatal—in my own practice, and with two fatal cases related to me by friends. This class of case is important because the significance of the symptoms is not sufficiently appreciated, and signs which are really of grave import are sometimes taken for signs of safety. The indications of danger to which I wish to draw attention are the same as the classical symptoms of death from hæmorrhage, but the latter are more or less masked by the action of the anæsthetic, and are caused in chloroform fatalities by some serious "failure of the circulation" causing sudden anæmia of the vital centres in the medulla.

CASE 1.—The patient was a boy, aged fourteen years, suffering from a simple cystic enlargement of the antrum. Chloroform was given on lint, and at the beginning of the administration the skin was warm, of a healthy rosy colour, and the pulse good. The anæsthetic was taken quietly; when the patient was "under" the mouth was gagged, the head raised rather suddenly on to a high pillow, and a gouge was thrust into the antrum. At this moment the respiration suddenly became more rapid and deeper, of a character expressing extreme "air hunger"; the pupils dilated widely, the pulse became very feeble and almost imperceptible, and the skin changed from a rosy hue to dead pale. I at once lowered the head and began to compress the chest vigorously; by this time the respirations had become very slow. The dependent position of the head and vigorous compression of the chest soon restored the circulation, normal respiration, and colour, but not before the patient had been in extreme peril. The signs of danger were the increased frequency of the respirations, associated with sudden wide dilation of the pupils, very feeble, running pulse, and pallor of the skin. The pallor of the skin of the face was not so marked as that of the body. This was due, I think, to the manipulation of the face involved in the putting in of the gag, cheek retractor, &c., causing a local hyperæmia of the lips and cheeks.

Regarding the cases related to me the information is not so complete.

CASE 2.—A boy, aged fifteen years, had been anæsthetised with chloroform for the removal of post-nasal adenoids. The operation had been completed and the anæsthetic withdrawn, when the patient was noticed to be breathing deeply. The operator observed some peculiarity about the colour of the face, but was reassured by the presence of free respiration. The respirations, however, suddenly ceased, and all efforts to resuscitate the patient failed.

CASE 3.—In this case a child had chloroform given for a slight operation. When the incision was made there was no hæmorrhage. This drew attention to the pulse; respiration, which had been observed throughout the administration, was then going on freely, but the pulse was imperceptible. Respiration soon ceased and a fatal result ensued.

The first case demonstrates the advantage of the line of treatment adopted, and the other two illustrate how easily the signs of danger may be overlooked. The indications for treatment are to get blood to the respiratory centre, to stimulate the heart, and to restore the blood pressure. For this purpose intermittent compression of the chest such as is obtained in artificial respiration is most valuable. It is not enough to get air in and out of the lungs by inflation or faradaisation of the phrenic nerves; the chest must be compressed so that some pressure is brought to bear on the heart. In the case of a rigid chest-wall I have seen benefit from pressure on the epigastrium directed so as to press in the direction of the heart. The value of compression as a stimulant to a failing heart seems well illustrated by the two following cases.

CASE 4.—I once delivered a woman of an apparently healthy, well-formed child, who, in spite of vigorous respiratory efforts, was unable to get air into the chest, and soon died. The difficulty arose from congenital absence of the diaphragm. The point of interest is that the heart continued to beat for some time, and whenever it had apparently ceased pressure over it re-started vigorous pulsations.

CASE 5.—In another instance, a man in a state of collapse, with badly fractured ribs and other injuries, was temporarily improved as regards his pulse by intermittent pressure over the heart, which from the falling in of the ribs could be exerted to great advantage.

In addition to stimulating the heart, artificial respiration, as pointed out in the Report of the Hyderabad Chloroform Commission, is remarkably successful in restoring the blood pressure—so much so, that "when the animal was really dead it was found in some cases that artificial respiration still maintained a small mean pressure in the manometer," and I have seen at least one instance, in the case of a child, in which, judging from the ruddy complexion and colour of the lips, the colour of which actually returned after pressure, a certain amount of blood pressure was kept up by artificial respiration when the patient was dead. The artificial respiration being employed to treat the dangerous failure of the circulation, not merely to get air into the lungs, it should be resorted to at once, before waiting for the cessation of the deep respirations, therefore to delay treatment until the respirations cease is to wait until the vital centres have been damaged beyond recovery and to lose the patient. I believe the value of artificial respiration in the treatment of chloroform accidents lies very largely, if not solely, in its action as a mechanical cardiac stimulant and restorer of the blood pressure, and to be effectual it must be performed so as to compress the chest.

If the above theory as to the cause of death is correct, we have in it an explanation of the mechanism of certain anomalous forms of death from chloroform. I refer to that class in which spasmodic contractions of some or all of the muscles are a prominent feature, the affection of the muscles varying from mere spasm of the jaw muscles, trismus, with fixation of the chest, to general convulsions resembling epilepsy. There are a large number of these cases reported in the medical journals, and I am not aware that any satisfactory theory has been advanced for their explanation. In 1859 Kussmaul and Tenner[2] showed that the convulsions produced by hæmorrhage were due to interference with the nutrition of the motor centres behind the optic thalamus, consequent on the deprivation of blood, whether this deprivation or anæmia was brought about by hæmorrhage or by ligation of the vessels supplying the brain, and a similar sequence of symptoms is apparently produced by drugs which cause sudden paralysis of the circulation—e.g., hydrocyanic acid. The chief symptoms of anæmia of the basal centres, as exhibited in rabbits, are transient contractions of various sphincter muscles of the face, followed by their relaxation, acceleration of the respiration, dilatation of the pupils, extremely violent general convulsions, clenching or alternate opening and shutting of the jaws, and occasionally voiding of urine and fæces. The general convulsions are followed by a period of quiet, in which there are at intervals deep sighing respirations, during which the chest expands enormously and the heart beats vigorously, but the pulse is imperceptible.

An almost identical series of phenomena occurs in death from sudden hæmorrhage or sudden "failure of the circulation" from any cause in man, and the same symptoms, having their origin in a similar cause, are seen in certain deaths from chloroform; but, naturally, they are to a greater or less extent obscured by the degree of general narcosis, and upon

[1] THE LANCET, Nov. 17th, 1894, p. 1148.

[2] Kussmaul and Tenner on Convulsions: New Sydenham Society.

this depends the various and at first sight conflicting conditions under which death from chloroform presents itself. The anæmia of the respiratory and other centres, which, in a conscious man or animal will produce general convulsions, will in the same being, were he anæsthetised, cause symptoms affecting only the series of muscles not under the influence of the anæsthetic. In accordance with the Law of Dissolution, a general anæsthetic like chloroform should affect the various nervous and muscular system of the body in a certain progressive order, the various portions of the accessory system becoming narcotised first, and the more fundamental systems being affected last. Something like this does happen, for of the various voluntary muscles and muscular systems of the body the jaw muscles and certain facial muscles are affected late, and the respiratory muscles last of all. A patient may be sufficiently unconscious for the performance of a surgical operation, while a number of muscles and organs are unaffected and capable of responding to their natural stimuli. Further, when death does happen under chloroform it is not, as a rule, due to the regular progressive narcotic action of the drug, as in the case of opium poisoning, but it arises from the sudden excessive action of the agent on some vital centre or the paralysis of one centre secondarily to the weakening or death of another. This is proved by the fact that death may and does happen at any stage of the anæsthesia, and the symptoms of death vary according to the stage of anæsthesia I consider that this death is always from "failure of the circulation," and that the widely divergent symptoms attending dissolution depend upon the degree of narcosis present when the failure of the circulation has reached a point incompatible with the proper nutrition of the vital centres.

The signs of danger have to be taken from the organs which are left intact to give them. Thus, if the failure of circulation takes place at a very early stage, before the general muscular system is narcotised, it will be indicated by accelerated respirations, dilated pupils, and general convulsions resembling epilepsy, the symptoms terminating with deep gasping respirations, ceasing suddenly, as in the following fatal case.[3]

CASE 6.—The patient was a man, aged thirty years, described as not in "robust health." Chloroform was given to him while he was "sitting in a chair," a position conducive to cerebral anæmia; he appeared to be going off comfortably when he began to raise his hands and kept spitting on the lint, and appeared as if about to vomit. Suddenly he was violently convulsed through his whole frame, as if in an epileptic fit. The administration of chloroform was discontinued and he was laid in a semi-horizontal position. The convulsion only lasted for a few seconds, and when it ceased he began to breathe with effort and puffing of the lips, and immediately to gasp irregularly. His pulse was almost imperceptible and intermittent.

If the degree of narcosis is still deeper when the failure of circulation takes place, the anæsthetised muscular system will not respond as a whole, there will be no general convulsions, but only spasm and disordered action of the less narcotised muscles, such as clenching of the jaws and rigidity of the chest muscles, as in the following case, also quoted from Snow.[4]

CASE 7.—The patient, a man aged forty-three years, struggled a good deal. In a short time the inhalation took effect and he began to snore; the chloroform was then removed. The incision was just about to be made when it was noticed that the pulse, previously good, "was gone." At this stage the face was much congested, the jaws were firmly closed, and the pupils dilated. Artificial respiration was begun; in a few minutes he made a long inspiration. This was soon followed by a second, by a third at a longer interval, and at still longer periods by a fourth and a fifth, when all attempts at natural breathing finally ceased. The chest was noticed to be much contracted, to have apparently lost its elasticity, and not to expand when the ribs were forcibly compressed during the artificial respiration—i.e., it remained fixed in a condition of expiration, a state which has frequently been observed.

Failure occurring at the stage of ordinary surgical anæsthesia, when with the exception of the respiratory system all the muscles are relaxed, will be denoted by exaggerated respiratory movements and dilated pupils, as in the cases described in my previous paper. When death ensues without any exaggeration of the respirations it may be assumed that the anæsthetic has been gradually absorbed to such an extent as to paralyse the respiratory centre and render it incapable of expressing its condition of anæmia by the normal method of exaggerated respiratory movements. I think the truth of these conclusions will be confirmed by experiments with a drug which causes sudden paralysis of the circulation, such as hydrocyanic acid or some of the nitrites. The symptoms produced by poisonous doses of hydrocyanic acid are almost identical with those already described as induced by sudden hæmorrhage. There is rapid respiration, convulsions, followed by deep sighing respiration, rapid action of the heart, quick feeble pulse, &c., with general vascular dilatation, all being evidence of anæmia of the motor centres behind the optic thalamus, and manifestly caused by the poison paralysing the circulation. In the case of hydrocyanic acid, as the heart continues to beat for some time, the lesion is evidently a vaso-motor paralysis. By the administration of this drug to animals in different stages of chloroform anæsthesia a similar succession of symptoms could no doubt be produced such as are seen in these various forms of death from chloroform in man. This analogy between the symptoms produced by hæmorrhage and those produced by fatal doses of chloroform also throws some light upon the question of idiosyncrasy, and may explain the occurrence of some fatal cases. In the old bleeding days it was well recognised that certain individuals could not bear loss of blood, however slight, without experiencing serious constitutional disturbances, such as fainting, or general convulsions, which meant that the motor centres of those individuals were so unstable that they were intolerant of any change in their blood-supply. Any alteration in the direction of lowered blood pressure in these persons would be equally productive of similar consequences. May it not easily be the case that in such persons the normal and unavoidable disturbances of the circulation following the inhalation of chloroform would be dangerous and productive of fainting or even fatal syncope? It is clear that in these cases death is not due to primary paralysis of the respirations, but to failure of the circulation.

What is this "failure of the circulation" which causes anæmia of the respiratory and other centres? In my previous paper I suggested that it must be due either to vaso-motor or to cardiac paralysis, and I inclined to the former theory. In some notes on the Hyderabad Chloroform Commission[5] I pointed out that, if those carefully performed experiments proved anything at all, they certainly did prove that the chief danger from chloroform was the induction of vaso-motor paralysis. On looking over the report of the Commission at this interval of time it is difficult to imagine how such careful observers could have ignored the evidence in favour of vaso-motor paralysis as the cause of death in nearly all fatal cases. Professor A. W. Hare, in a recent paper, in which he gives his adherence to the theory of vaso-motor paralysis, shows that the one point upon which all laboratory experiments do agree is that the inhalation of chloroform invariably causes a fall in the blood pressure, and the late researches of Dr. Leonard Hill tend to confirm that view. How far the heart contributes to the fatal result, either by its own inherent weakness or from its becoming affected by the anæsthetic, is a problem still awaiting solution. Dr. Alexander Haig[6] has ably advocated the theory that in the rise of blood pressure which follows the cessation of chloroform inhalation the weakened heart becomes overpowered by the high pressure. This may explain a certain number of cases, but does not apply to the majority.

Considering the experimental evidence, the clinical evidence, the light thrown upon the subject by a comparison of the symptoms with those of death from other well-recognised causes, and the effect of treatment, there can be no doubt that in most, if not all, cases death from chloroform is due to vaso-motor paralysis, or at least the fatal changes are initiated by the fall in blood pressure. The symptoms preceding death vary according to the degree of narcosis that has been reached at the time when the vital centres begin to be affected by the depletion of blood consequent upon the vaso-motor paralysis. Under these circumstances it is of importance to know what means are available for estimating the blood pressure in a patient

[3] Snow on Anæsthetics, p. 160.
[4] Ibid., p. 167.
[5] Medical Chronicle, April, 1890.
[6] THE LANCET, Feb. 23rd, 1895.

under chloroform. This is a difficult matter, the heart and pulse being in themselves imperfect guides, for as the pressure falls the heart beats more vigorously in attempting to keep it at the normal standard, and what may at first sight appear a good pulse may be only an extra effort on the part of the heart to restore the falling blood pressure. The pulse in chloroform anæsthesia, as in everything else, requires discrimination for its observation and must be considered in conjunction with other signs. Again, the colour or complexion of the patient is not of much help in itself, as there are many instances in which persons who enjoy perfect health have almost corpse-like complexions, and equally many with feeble circulations, or even the dead, may have a colour, as in the case of the child previously mentioned. Probably the best index of the condition of the blood pressure we possess is the circulation in the capillaries, and the best way of testing this is by pressing on the lips or gums and noting the rapidity with which the blood returns after the compression. The circulation in the capillaries is a matter of blood pressure, if the blood returns rapidly the pressure may be regarded as good, if it returns slowly the pressure is low. Some information can also be obtained from the way in which the blood stagnates in dependent parts, such as the dependent cheek or ear, &c.

There are a number of minor signs worthy of study—e.g., movements of the alæ nasi and facial muscles, alteration in rhythm of the respirations, and the like. All of these indicate some change in the condition of the patient. In one instance, in the case of an old man who, towards the end of an operation, was slightly under the influence of chloroform, the first indication of failing circulation was the occurrence of yawning, which led me to lower the head and take measures to stimulate the circulation. Signs such as these are of more value than the mere rate, volume, &c., of the pulse, as they show to what extent the circulation is being efficiently performed and is really effective, and it is well known under what different conditions of pulse an efficient circulation can be kept up.

Note.—Since the above paper was written and sent off Dr. Leonard Hill has published a valuable communication on the Causation of Chloroform Syncope.[7] The conclusions arrived at by Dr. Hill from experimental evidence are, in the main, in accordance with those expressed in the above paper and obtained from a study of the symptoms observed in cases of chloroform syncope.

Manchester.

A CASE OF DOUBLE VASECTOMY; DEATH; PARTIAL NECROPSY.

BY W. FRANK COLCLOUGH, M.B., B.C. CANTAB.,
MEDICAL OFFICER TO THE BRITISH HOSPITAL, OPORTO.

A MAN, aged seventy years, of unusual physique, commenced to have prostatic trouble at the age of sixty-seven years. He had been a free drinker, especially of whisky, but had always led an exceptionally active out-door life. The irritability of the bladder commenced gradually, with attacks every three or four months. I first saw the patient in October, 1894, when he was suffering from an attack of acute cystitis. Confinement to bed, simple treatment, and washing out the bladder had the desired effect, and eventually, with very careful "catheter life," the patient was able to go fishing all day and could walk from ten to fifteen miles. In October, 1894, the prostate was enlarged (both lobes equally to the finger); there was no definite retention, and a large-sized Jacques catheter passed with ease. For the next fourteen months—i.e., until Christmas, 1895—the patient was very comfortable, putting on flesh, and going about his work. In December, 1895, urethritis commenced, and it was necessary to pass the catheter every six hours. The left lobe of the prostate had apparently increased very considerably, and the patient used to complain of pain in the region of the left kidney; this pain was fixed and of a severe, dull, aching character. From this time the patient gradually became worse and worse. He lost flesh, complained terribly of flatulence and dyspepsia (the pain at times was "crippling"), and the urethritis became almost constant. No urine was passed except by the catheter, and there was frequently pain in the perineum and just above the pubes on the left side. Finally the patient's life became almost unbearable, and in the middle of October, 1896, an attack of acute cystitis occurred, with a temperature of 104° F. Treatment improved this, and then, as the patient was comparatively well, double vasectomy was decided upon, in the hopes of relieving the bladder troubles. Mr. Arthur Shillitoe saw the patient with me in consultation. Examination of the prostate was extremely painful; both lobes were enlarged. On the left side the lobe was apparently the size of a large Tangerine orange. On passing the finger into the rectum a definite groove was felt in the mass on the left side, and it was not possible to pass the finger beyond the upper limit of that mass. A large-sized catheter passed easily, and the urine was clear, containing no albumin.

Operation (Nov. 11th, 1896).—The A.C.E. mixture was given by Mr. Arthur Shillitoe. Examination of the left epididymis showed the presence of chronic enlargement. An incision was made over the right cord at the top of the scrotum, as there was a number of enlarged veins. These were separated from the vas; the latter was drawn quite out of the wound, about three-quarters of an inch excised, and the two ends were tied securely with catgut. The wound was dusted with loretin, the edges were brought carefully together and sutured with fishing gut, loretin and boracic acid dusted over, and a sealed dressing of sal alembroth gauze and collodion was applied. The left side was treated in the same way. The patient took the anæsthetic badly, and when "coming to" became wildly delirious, tearing his bandages off, and everything had to be re-dressed. A catheter was passed at 3 P.M., at 7 P.M., and at 10 P.M. During the night the patient passed urine naturally, but with a little pain, every hour. For about six months previous he had never been able to pass urine naturally. On the 12th the temperature was 99° and everything was quite satisfactory. Ten grains of boric acid three times a day were ordered. On the 13th the patient had a good night. He passed urine naturally twelve times in twelve hours with less pain, the quantity passed being three pints and eighteen ounces. The catheter was passed twice. On the 14th the temperature was 99°. The urine contained pus. It was passed freely and naturally and with less pain to the quantity of three pints and six ounces, and was retained once for three hours and twenty minutes. The patient was ordered to sit up in bed. On the morning of the 15th the wounds were dressed. There was primary union. The urine contained a quantity of pus and the patient had diarrhœa. He was ordered to sit up in a chair. In the evening, during the nurse's temporary absence, the patient got up and walked to the closet, which was outside at the end of the balcony, a cold east wind blowing. Here he remained for some time, the result being blood in the urine, a large quantity of pus, and refusal to take food. The bladder was washed out. On the 16th in the morning the patient was flushed, and he complained of flatulence. He had passed a pint and seventeen ounces of urine naturally in twenty-four hours. The bladder was washed out, and two grains of β-naphthol and five grains of bismuth salicylate three times a day were ordered. In the evening the patient was better and the urine clearing. The bladder was washed out. For the first time there was some difficulty in passing the catheter. The temperature was 98°. On the morning of the 17th the patient was better. The temperature was 98·4°. There was difficulty in passing the catheter. The urine was foul but acid. He had passed urine freely and naturally during the night (three pints and four ounces), but owing to the difficulty and pain when the catheter was passed the patient would not permit it to be done during twelve hours. In the evening he was better, and the urine was free from pus. He did not take food well. On the 18th the temperature was 98·6°. A catheter was passed. The bladder was washed out; the residual urine, six ounces, was foul-smelling but acid. The incisions were dressed; the left had quite healed, but the right was rather irritated, and so was the scrotum. The patient had passed three pints and five ounces of urine naturally. On the 19th (the eighth day after the operation) the prostate was examined; the right lobe was about half the size it was before the operation; the left lobe below the groove was distinctly softer, but there was no change in size. The urethra measured roughly by the catheter seven inches. A.

[7] Brit. Med. Jour., April 17th, 1897.

coudé catheter was passed with some difficulty. The urine was in a better state. The patient had had a good night, but suffered slightly from diarrhœa. The temperature was 99·4°. On the 20th the urine was very foul. The patient's appetite was failing. There was less diarrhœa. About two pints of urine had been passed naturally. The temperature was 99·8°. On the 21st the tongue was dry. The bladder was washed out at 6 A.M. The urine was very foul (? ammoniacal). At 11 A.M. the urine was slightly acid, and not so foul; two pints and one ounce were passed naturally. On the 22nd the patient was better. The temperature was 99·2°. The urine was less foul; the quantity passed naturally in twenty-four hours was about two pints. On the 23rd the patient was better. Two pints and five ounces of urine had been passed. On the 24th a large catheter was used. The patient was given a hip bath. He was walking about the room. On this day the nurse left. The patient was fairly comfortable until Dec. 1st, when an attack of acute cystitis supervened, and as there was so much difficulty and pain on passing the catheter, after a consultation on the 3rd with a Portuguese colleague, Dr. Roberto Frias, it was decided to tie in the catheter. The patient was put on milk diet and the bladder washed out every six hours. For a day or so he improved, but on Dec. 14th he became more or less delirious and died in a comatose condition on the 18th. For about two days before death the patient would lie with his legs drawn up, and he complained of terrible pain when they were touched, although the abdomen was quite supple and there was no pain on pressure. This symptom was accounted for after death.

Necropsy.—It was only possible to have a very slight and hurried post-mortem examination. On opening the abdomen

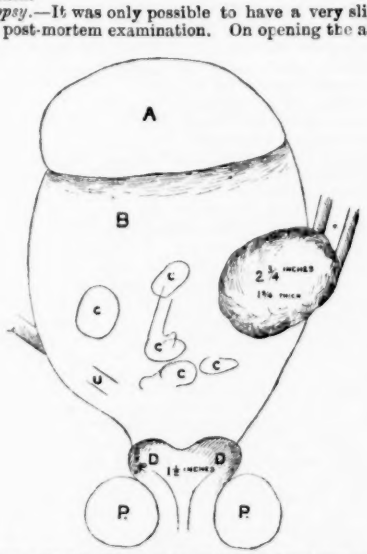


Diagram of bladder laid open by vertical incision viewed from the front. A, The thinned portion of bladder-wall. B, The thickened portion with C, sacculation. U, Opening of right ureter. D, Middle lobe of prostate. P, Lateral lobes of prostate.

the first thing noticeable was that there were several coils of intestine in front of the bladder below, and that the whole of the front surface of the bladder, with the exception of the upper third, was in a state of acute inflammation. The prostate gland was simply a bag of pus, and the bladder itself was anchored down to the posterior wall of the abdomen. The left kidney was with a great deal of difficulty torn away from its surroundings, as it was firmly bound down by recent as well as old adhesions, and to the feel it was simply a bag containing fluid. The left ureter was about the size of one's forefinger. The right kidney was hypertrophied but came away quite easily, and the right ureter was apparently normal. The two kidneys, ureters, and bladder were all taken away for examination. The lower two-thirds of the bladder were very much hypertrophied and thickened; the upper third was just like a bag of parchment. Apparently joining the left ureter was a mass which I at first thought must be malignant growth. On opening the bladder and stretching it out the lateral lobes of the prostate just oozed with pus; the middle lobe was soft and pendulous (suggesting the cause of the difficulty in passing the catheter) and measured an inch and a half from side to side and five-eighths of an inch from above downward. The lower two-thirds of the bladder were sacculated and very much thickened, and there was pus in all the sacculations. The right ureter opened normally, but the left ureter apparently lost itself in the mass of new growth, which was almost circular, measuring two and three-quarter inches in diameter and one and three-quarter inches in thickness (*vide* Figure). Below this mass was a closed-in abscess cavity with thin, smooth walls two and a-half inches in length. The left ureter was very much hypertrophied, about the size of one's forefinger, and lost itself blindly in the mass of inflammatory tissue. The opening could not be found, and it seemed to be quite shut off about two inches from the bladder-wall. There was little or no renal tissue left in the left kidney, which was simply a bag of pus. From the information I gained after death, I should conjecture that the inflammatory growth had been present at least a year, and that probably for many months no urine had passed into the bladder by the left ureter. The condition of old and recent inflammation about the left kidney quite explained the pain the patient had suffered from, as did the condition of the prostate and intestines, the cause of the drawing-up of the legs, although there was no evident peritonitis on the surface of the intestines. Portions of the mass of new growth were sent to the Clinical Research Association. Their report was: "There is no evidence of malignant disease in these portions of bladder. But the muscular coat of the organ is infiltrated with an abundance of dense inflammatory material. There are the indications of fasciculation and sacculation of the bladder, due to the prostatic enlargement. No doubt this induration is due to the chronic cystitis, and by compression of the ureter has caused secondary changes in the kidney."

The clinical evidence of the value of the operation in this case seems to me most satisfactory, for within sixteen hours the patient passed urine naturally. On the eighth day after operation there was definite evidence to the finger that the prostate was not only softer but smaller. I cannot help thinking that the trouble in passing the catheter on the fifth day was due to the middle lobe becoming softer, and therefore acting as a valve, preventing the admission of the catheter, because at times the instrument would pass with the greatest ease. I do not see how the condition of the bladder and left kidney could have been recognised before death, and with my present knowledge my amazement is that the patient lived as long as he did.

Oporto, Portugal.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

THYMOL AS A VERMIFUGE.

BY F. M. SANDWITH, M.D. DURH., M.R.C.P. LOND.,
PHYSICIAN TO KASR-EL-AINI HOSPITAL.

FOR many years I have been using thymol as the most perfect destroyer of the ankylostomum duodenale and any accompanying parasites in the intestines of my Egyptian patients. Sometimes it takes many doses of the drug to rid a man of his last remaining nematode, but the following case ought to encourage any doubters to persevere with the thymol treatment.

A man, aged thirty-three years, was admitted from the out-patients on April 29th, 1897. He was a peasant from Assiout, but for the last two years he had worked in Cairo. He was found to have anæmia from ankylostomiasis of twelve years' duration, and for the last year he had had pellagra. On May 2nd he was given sixty grains of thymol in two doses upon an empty stomach followed by a purge. In the fæces that afternoon were found 523 specimens of ankylostomum duodenale besides 55 oxyurides. On the 7th the thymol treatment was repeated. No ankylostomum duodenale was found, but there were 3 oxyurides. On the 17th the thymol treatment was employed for the third time,

but no worms were passed and no eggs were found microscopically. The three examinations in the case of this patient were made by Professor Looss, of Leipzig, thus precluding all error, and it is fair to say that the cause of this chronic disease was removed by sixty grains of thymol. The patient was extremely anæmic on admission, but three weeks later was much less so, owing to the administration of iron, rest, and better food. His weight remained at 138 pounds before and after treatment. The symptoms of pellagra were a slight roughness of skin on the extensor surface of the hands, forearms, elbows, feet, legs, and knees, the tongue pale and denuded of epithelium, and increased knee-jerks. He was sad and melancholy-looking and unable to smile, and there was tenderness on pressure over the spinal nerves on both sides of the fifth dorsal vertebra. Thymol has, of course, no direct effect upon the poison of pellagra.

Cairo.

A CASE OF A FOREIGN BODY TRAVERSING THE ALIMENTARY CANAL

BY MAURICE EDEN PAUL, M.D. BRUX., M.R.C.S. ENG., L.R.C.P. LOND.

A BOY, aged three and a half years, swallowed a copper ring on the evening of June 26th, choking and cyanosis ensuing for a short period after it had left the mouth. When I first saw the child, half an hour later, he was sleeping tranquilly. The symptoms had indicated that the ring was a tight fit in the post-tracheal portion of the œsophagus; but I trusted to the well-known rule that any object of simple shape that passes from the mouth to the stomach is not likely to stick lower down, and my confidence was rewarded by the passage of the ring, embedded in a mass of fæces, on the morning of July 1st. The patient had been entirely free from inconvenience while the foreign body was in his alimentary canal.

It is surprising how readily such objects as this pass through the ileo-colic orifice. The orifice is described by Quain as a slit about half an inch in length; and yet in this case a ring only a shade less than three-quarters of an inch in diameter passed without difficulty in a little child.

Nagasaki, Japan.

SEVERE SYMPTOMS FOLLOWING THE ADMINISTRATION OF A SMALL TEASPOONFUL OF CAMPHORATED OIL.

BY FRANCIS S. TIDCOMBE, L.R.C.P. LOND., M.R.C.S. ENG., L.S.A. LOND.

A MALE child, aged one year and ten months, was given a small teaspoonful of camphorated oil instead of "cough mixture." When the mistake was discovered (some two or three minutes afterwards) the nurse gave the child half a teacupful of cold water with a teaspoonful of salt in it. The child did not vomit or show any symptoms until about twenty minutes later, when he fell on the carpet "in a fit." The fit lasted "a few seconds," and the child remained unconscious. The nurse picked him up and carried him to my house (about two minutes' run). On the way he vomited. When I saw him he was quite unconscious, the extremities were cold, the breathing was deep and slow, there was hardly any pulse at the wrist, the eyes were half closed, and the pupils were widely dilated. I applied hot sponges over the heart and administered a weak current of electricity. He rapidly revived and was again sick. As soon as he could swallow I gave him a copious draught of warm milk-and-water, which speedily returned. Within half an hour he was able to walk. He was sick twice more after drinking milk, and was decidedly drowsy all day. The strength of the camphorated oil was about 1 in 4, so he must have taken about 15 grains of camphor.

Guy and Ferrier describe two cases, in one of which 20 grains caused severe symptoms in an adult, and in the other 30 grains proved fatal in a child aged eighteen months. Considering the very frequent use of camphorated oil as an application to the chests of infants and young children it seems to me that it ought always to be sold in distinctive bottles and labeled "Poison."

Bognor.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum propriis collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

NORTH LONDON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

A CASE OF "CHRONIC MALIGNANT ENDOCARDITIS"; NECROPSY.

(Under the care of Dr. G. D. PIDCOCK.)

FOR the notes of the case we are indebted to Mr. C. Stanford Read, resident medical officer.

A man, aged thirty-four years, was admitted to the hospital on March 2nd, 1897, under the care of Dr. Pidcock, complaining of weakness and shortness of breath. The patient's past history was as follows (some of the details of it have been kindly supplied by the medical practitioner under whose care he had previously been). He had rheumatic fever when five years of age, and subsequently had been subject to rheumatic pains in various parts necessitating his giving up work for a short time. He nevertheless had fair health till September, 1896, when he had to give up his work on account of progressive weakness, cough, occasional vomiting, pains in the chest, and shivering at times. He had had on two or three occasions attacks of pyrexia of a remittent type. Diarrhœa and vomiting were marked symptoms at times, and this his medical attendant had put down to errors in diet in one who was an invalid. In the course of his illness he had pleurisy (? splenitis), bronchitis, and pneumonia, and always the cardiac trouble, but no œdema at any time. On admission the patient looked very haggard and worn, with a slight malar flush on each cheek. The respiration was 20 per minute; the pulse was 108, of medium size, somewhat irregular in force and rhythm, and of fair compressibility; and the temperature was normal. His lungs seemed to be normal, except for some small crackling *râles* at the extreme right base. On examination of the heart the apex beat was seen and felt in the fifth intercostal space (three-quarters of an inch outside the nipple line), the impulse being markedly heaving. On percussion there was distinct evidence of considerable hypertrophy and dilatation of both sides of the heart. There was a well-marked thrill to be felt all over the cardiac area, the exact timing of which was difficult—at any rate, it was mostly systolic. It was especially marked in the second left intercostal space. On auscultation there was heard a long, loud murmur, which it was also very difficult to time on account of the irregular action of the heart. No second sound was detected at the apex. At the base a distinct to-and-fro murmur was heard, especially loud over the second left costal cartilage, where it had a very superficial character. Further examination revealed the fact that the systolic murmur was audible over the whole of the pulmonary area. The other organs presented no abnormalities. The urine was of specific gravity 1018, acid, and contained no albumin or deposits. For some time the patient made good progress; he felt better generally and put on weight, and the heart's action became much more regular under treatment. Pain in his right side was occasionally complained of. All went well till March 24th, when he complained of diarrhœa and sickness accompanied with some abdominal pain. On the 25th he was sick three times and the bowels were opened five times, the stools consisting mostly of undigested milk. On the 26th he was sick twice and the bowels were opened seven times. The pulse was very soft, but only slightly irregular. On the 27th the bowels were opened seven times, the motions being rather foul. There was great tenderness all over the abdomen. The heart condition was the same, but the thrill was not so marked. On the 28th the sickness stopped. He felt very weak. The bowels were opened four times. He complained of giddiness and not being able to see

well. The abdominal pain was not so acute, but the abdomen was still very tender to palpation. There was a slight icteric tinge in the conjunctivæ. On the 29th there had been no more diarrhœa or vomiting. The patient was gradually sinking; his face was somewhat cyanosed, with the icteric tinge more marked. Great abdominal pain occurred till within a quarter of an hour of death.

Necropsy.—At the post-mortem examination the pericardium was found to be normal, and its cavity contained no excess of fluid. The heart was tremendously hypertrophied, but this was most marked on the right side. The pulmonary artery was seen to be enormously dilated. The pulmonary valves were much diseased and quite incompetent, one valve having been quite destroyed and the others being thickly studded with sloughy vegetations. Inside the right ventricle were vegetations and ulceration, just in the position where the valve that had been destroyed might have flapped back and infected the area. The other valves of the heart were healthy, but the mitral and tricuspid orifices were both dilated, especially the former, and it is probable that mitral regurgitation had taken place during life. The lungs were congested, but otherwise normal; no signs of infarcts, recent or old, were found. From the cardia to the rectum there were signs of a most severe gastro-enteritis, fully accounting for the abdominal pain, diarrhœa, and vomiting. The mucous membrane of the stomach was somewhat atrophied. No signs of emboli or ulceration were observed anywhere in the alimentary canal. The liver and spleen were congested, but otherwise they were normal.

Remarks by Dr. PIDCOCK.—This case presents many features of interest. During the patient's stay in the hospital his temperature, taken twice daily, never rose above normal; nor was there during the last two months of his life or on post-mortem examination any evidence of multiple embolism. The absence of both these most typical signs of ulcerative endocarditis is very remarkable. During his illness (commencing in September, 1896) he certainly had pyrexial attacks, rigors, and occasionally coloured sputum and perhaps an attack of splenitis, all of which were doubtless due to embolism. Still, he had not many of the most usual signs or symptoms of infarction, such as hæmaturia, retinal or cerebral hæmorrhage, or blocking of any of the arteries of the limbs, &c. He had an attack of acute rheumatism at five years of age, which may have affected the endocardium of the right ventricle and pulmonary valves, or, what is even more probable, he may have had endocarditis of the right ventricle during fœtal life. Whether this was the case or not, I think there can be little doubt that the endocardium of the right ventricle and pulmonary valves were infected during the attack of pneumonia which he appears to have had in September, 1896. The intensity of the gastro-enteritis from which he succumbed was also very remarkable. From the stomach downwards the mucous membrane was intensely congested. I cannot see how it could have been caused by emboli, and one would hardly expect an error in diet to have been sufficient cause, and yet nothing else could be discovered to account for it.

DERBYSHIRE ROYAL INFIRMARY.

A CASE DIAGNOSED AS ACUTE INFLAMMATION OF THE PANCREAS, IN WHICH RECOVERY TOOK PLACE.

(Under the care of Dr. MILNES.)

THOUGH cases supposed to be examples of acute pancreatitis were described many years ago by several observers, as by Bécourt,[1] yet, as these opinions were chiefly based on naked-eye appearances found at post-mortem examinations, it is probable that in many of the cases the abnormal appearances were the result of decomposition rather than of inflammation. In fact, doubts even of the existence of pancreatitis arose, and so late as 1869 Grisolle wrote[2]: "We have still absolutely no exact knowledge of either acute or chronic pancreatitis." More recently, however, very many cases have been reported in which certain definite clinical manifestations have been found associated with unmistakable evidences of inflammation of the pancreas, as revealed at the necropsy. Unfortunately, in the vast majority of the cases the making of a diagnosis has only been possible after death, but in a certain number, where the inflammation of the organ has gone on to suppuration, the abscess so formed has been evacuated by surgical means, and recovery has followed. Many have doubted whether recovery is possible in cases of acute pancreatitis, but there can be little hesitation in admitting that such cases do occur. H. Mollière[3] expressly states that at least three cases have been observed in which the inflammation has subsided. Until the disease can be readily recognised by its symptoms, some doubt must always be present as to the accuracy of a diagnosis which has not been verified by a post-mortem examination. Judging, however, from similar inflammations in other organs, it is extremely probable that the disease is much more frequent than is usually thought, and that many cases are missed because they end in recovery.[4] The diagnosis in the following very interesting case is perfectly justifiable, and is the only one which will account for the course of the disease.

The patient, a man aged twenty-one years, was admitted into the Derbyshire Royal Infirmary on July 14th, 1896, complaining of abdominal pain and vomiting. He had always been a strong and healthy man of sober habits. His work involved exposure to great variations of temperature, and the air he breathed was usually loaded with foul gases. No history of any previous illness could be obtained. Three weeks before admission he began to suffer from pain in the lower part of the abdomen. This usually came on when he started to work after a rest and wore off as he worked. According to his own expression "his belly felt hard." About the same time the bowels became obstinately constipated. He continued to work until a few days before admission, the pain getting worse and his "belly getting harder" all the time. He took a certain amount of purgative medicine without much effect; but he did not persevere with it, and he could not remember when the bowels were last moved. On the night before admission the pain suddenly became violent and he was seized with urgent and profuse vomiting, which continued till he came to the infirmary. Dr. Cassidi, who saw him before he came in, described his condition as one of extreme collapse and as strongly suggestive of gastric or intestinal perforation. On admission, on July 14th, 1896, the patient's temperature was 102·4° F., and the usual symptoms of pyrexia were present; his pulse was 116, full, and bounding; the tongue was dry and brown; and the skin was hot and dry. The mind was quite clear, but the face was much drawn and the expression that of great suffering. He referred all his pain to the region of the epigastrium, and the condition of the abdomen was such that he could not pass urine on account of the pain caused by the attempt to micturate. The legs were not drawn up and he lay flat on his back, maintaining his posture with much stiffness. On examination the abdominal wall was found to be retracted to an extreme degree, so that the abdomen presented a concave instead of a convex surface in nearly every direction. It was stiff and quite unmoved by respiration, which was entirely thoracic and not at all hurried. The abdomen was universally and acutely tender to the touch, especially at the upper part, where even a feather-weight pressure caused severe pain. The urine, drawn by catheter, had a specific gravity of 1030; it was acid, highly-coloured, and contained a trace of albumin, but no sugar. No abnormal signs could be detected in any other organ. A third of a grain of morphia was injected hypodermically, and poppy fomentations were applied to the abdomen. Peptonised milk was ordered to be given in small and frequent doses, also four ounces of brandy daily. At 8 P.M. the pain was still severe, and an eighth of a grain of morphia was injected. On the 15th the patient passed a fair night, the pain being less severe; there had been no more vomiting, and no action of the bowels had occurred. The pulse was 110. The abdomen was still retracted, but was less tender to the touch. He was drowsy from the morphia. On the 16th he had three severe attacks of spasmodic pain in the night, which were relieved by poppy fomentations. He still complained of nausea, but there had been no vomiting. He had no pain while lying quiet in bed during the day, and the abdomen was less tender in the lower half. On the 17th he had one severe attack of pain in the night, accompanied by vomiting of bilious material. A sixth of a grain of

[1] Recherches sur le Pancréas.
[2] Pathologie Interné.
[3] Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques, vol. xxv., p. 718.
[4] R. H. Fitz, Medical News, vol. liv., p. 310.

morphia subcutaneously appeared to give relief. There was almost no tenderness in the lower half of the abdomen, but the tenderness was still acute in the whole abdominal area above the level of the umbilicus. An enema of warm water brought away a small quantity of hard fæces. On the 18th another attack of pain in the night was again relieved by morphia injection. He still had nausea, but no vomiting. An enema was given, but was returned unchanged. A second enema brought away a good stool. On the 19th the patient had two attacks of pain in the night, one severe, and he also had two attacks of vomiting. His tongue was much cleaner, and the pulse was of good volume and averaged 100. The enema was repeated and acted well; no fat was noticed in the stools, although it was looked for every time the bowels acted. In the evening of this day the patient was suddenly seized with collapse and gasping respiration, the pulse becoming almost imperceptible. A second attack followed the first and was much more severe, and death appeared to be imminent. A hypodermic injection of three drops of liquor strychninæ seemed to revive him and he quickly recovered. On the 20th he had two further attacks of faintness during the night, but they were not nearly so alarming as the two before noted. He also had several attacks of pain, but they were not severe. He had been much better since 4 A.M. The abdominal tenderness was markedly less and was now limited to the epigastric region. One spot about two inches above and to the right of the umbilicus was specially and acutely tender. There was also tenderness in the back on pressure just below the twelfth rib on both sides of the spine. The abdominal walls were still retracted and the muscles were rigid, but not so markedly as on admission. The question of surgical interference was seriously considered, but it was decided to wait. A simple enema was ordered to be administered daily. Chicken tea was ordered to be given in addition to the peptonised milk. On the 22nd, though there had been slight vomiting on the previous day, in other respects there was great improvement. His tongue was nearly clean, the pulse was only 76, and there was no fever. The abdomen was still flat and without movement, but it was quite soft and could be handled freely without pain, except at the one spot above and to the right of the umbilicus. On the 22nd and 23rd the patient had a severe attack of pain each night, culminating in vomiting, which gave relief, and on the 24th three minims of dilute hydrocyanic acid with ten grains of bicarbonate of soda were ordered every six hours. No pain or vomiting occurred after this. The daily enema acted well, but every night the temperature continued to rise until on the 27th it reached 102·4°. The enema was then discontinued, and the evening rise of temperature quickly subsided. After six clear days the bowels began to act without artificial stimulation. On the 30th all tenderness was gone from the abdomen, which, however, was still rather flat, and did not move freely with respiration. From this date recovery was uninterrupted, and he was discharged on Aug. 31st, 1896, quite well.

Remarks by Dr. MILNES.—Those cases in which the existence of acute pancreatitis has been proved, either on the operating table or in the post-mortem room, have presented a combination of the symptoms of acute intestinal obstruction with those of perforation of the stomach or bowel. The cardinal symptoms appear to be (1) violent abdominal pain of a spasmodic character; (2) constipation, usually complete; (3) vomiting; (4) recurrent attacks of collapse during one of which the patient usually dies; and (5) the onset is generally sudden, but in a few cases the existence of colicky pain has been noted for a short time before the attack. All these symptoms were present in the above case except the fatal termination. With the exception of the case recorded by Osler, where the diagnosis was made during an exploratory laparotomy, I am not aware of any case of recovery after a diagnosis of acute pancreatitis. Osler's case, however, proves that recovery may take place. In the present case the diagnosis of acute pancreatitis was suggested to me early in the patient's illness by the acting house physician, Mr. Miles. After mature deliberation and consultation of all accessible reports I have come to the conclusion that this diagnosis is the only one that offers a reasonable explanation of the symptoms. The alternatives appear to be—(1) peritonitis of the so-called idiopathic character; (2) ulceration of the duodenum without perforation, causing sudden acute peritonitis; and (3) the passage of gall-stones, causing acute peritonitis. Intestinal obstruction and perforation of viscera are put out of the question by the progress of the case. 1. It is now generally recognised that mere peritonitis is not a sufficient explanation of any illness. There must be some local cause. In this case the local cause of the peritonitis which existed was evidently something in the upper part of the abdomen. It is difficult to suggest any local cause for acute general peritonitis in this region which would not have made its presence manifest by some further symptoms. For instance, perforation or sub-phrenic abscess must have led to events such as never occurred in this case. 2. Ulceration of the duodenum was naturally suggested by the situation of the point of maximum tenderness. The whole course of the disease, the rapid and complete recovery, and the fact that the man was quite well till a short time before the acute symptoms set in, all make against a disease which must have some period of chronicity in its course. The transient nature of the attacks of collapse and the absence of melæna show that these phenomena were not due to hæmorrhage from an ulcer. 3. Taking all the symptoms into consideration, it appears that the only way in which gall-stones could have caused this illness was by a stone becoming lodged low down in the common duct and there setting up ulceration and acute general peritonitis. If this were the case there must have been jaundice, and something must have been heard afterwards of the stone. This latter could hardly have escaped notice owing to the very strict watch kept on the stools throughout the case. Supposing this case to be accepted as one of pancreatitis, I think it adds one or two useful indications for diagnosis and treatment of future cases of a similar character. The local tenderness near the umbilicus, and still more the tenderness below the lowest ribs in the back may be sought for with advantage in doubtful cases. The history of this case further teaches us to leave the bowels alone. After admission of this patient into hospital no attacks of collapse occurred until we began to worry the bowels with enemata. Then, later, the evening exacerbations of temperature seem to have been due to the same cause, at any rate they subsided when the enemata were stopped. Among the cases recorded one is related in which fatal collapse quickly followed the administration of a purgative.

Reviews and Notices of Books.

A System of Medicine. By Many Writers. Edited by THOMAS CLIFFORD ALLBUTT. Vol. III. London: Macmillan and Co. 1897. Pp. 983. Price 25*s*.

HAVING referred on previous occasions to the object and nature of the System of Medicine, edited by Dr. Clifford Allbutt, our review of the third volume does not need any introductory remarks. The first part of this volume deals with "General Diseases of Obscure Causation," such as Rheumatism, Rickets, Acromegaly, Gout, Diabetes, &c., whilst the second contains papers on Diseases of Alimentation and Excretion.

The first article is on Acute Rheumatism or Rheumatic Fever, and is from the pen of Dr. Church. Acute rheumatism, as Dr. Church remarks, is a disease more easily described than defined, and he therefore considers the disease as equivalent to a synovitis accompanied by pyrexia and generally multiple. Such a description shows the courage of the writer, for by it he admits that the exact nature of the disease has not yet been discovered, although it is so widely diffused and occurs with such frequency, as is shown by some carefully compiled statistics accompanied by tables contained in appendices to the paper. In speaking of the etiology Dr. Church remarks that although no satisfactory evidence has as yet been procured of the constant presence of any single specific micro-organism, yet in not a few of its features the whole course of rheumatic fever resembles an infective disease; moreover, the curves of its mortality statistics in this country approximate very closely to those of pyæmia, puerperal fever, and erysipelas—diseases which are certainly associated with specific micro-organisms. The

evidence in favour of the chemical theory of acute rheumatism is considered to be unsatisfactory, as is also that in connexion with the nervous theory. Attention is drawn to the influence of fatigue and exposure in a dry and otherwise salubrious climate, as shown by the military returns during the Egyptian and Cape wars. The subject of hyperpyrexia is also fully dealt with.

The section on "The Acute Rheumatism of Childhood" is by Dr. Cheadle whose experience in the diseases of children makes his remarks of great value. He first draws attention to the differences between rheumatism as it occurrs in childhood and as it appears in maturer life, especially as regards the occurrence of cardiac complications. He also remarks that the series of rheumatic events is often spread out and scattered over a term of months or years, so that the history of a rheumatism may be the history of a whole childhood. At one time, for instance, there may be an endocarditis, a chorea at another, and an arthritis at another, without any further coincident manifestation of the disease. The difficulties of diagnosis are pointed out, especially as regards mistaking infantile scurvy for acute rheumatism. Dr. Cheadle also argues that mitral stenosis is the special product of the sub-acute, slow, recurrent course which is so characteristic of endocarditis in childhood; but the auscultatory evidences usually do not appear until some years later, when the disease is advanced and the mitral orifice has become permanently narrowed. Another exceptional and special feature of acute rheumatism in children is the development of subcutaneous nodular growths of fibrous tissue. This subject is most ably dealt with, stress being laid on their connexion with changes going on in the fibrous tissues of the cardiac valves or pericardium.

Dr. Archibald Garrod is responsible for the next three articles—namely, those on Chronic Rheumatism, Muscular Rheumatism, and Gonorrhœal Rheumatism. Dr. Garrod's writings are usually characterised by plainness and absence of unnecessary details, and these articles are no exception to the rule. The sections on Treatment are particularly worthy of perusal. The author favours the hypothesis that the so-called gonorrhœal rheumatism is due to a specific systemic infection of the gonorrhœal virus.

The important subject of Rheumatoid Arthritis was undertaken by Dr. Kent Spender, but before he had completed or revised his essay he was compelled to relinquish his task owing to a heavy affliction. Dr. Garrod undertook to revise and finish the work. A full description is given of bacterial investigations which have been made of the fluid from the diseased joints, and these would seem to show that some, at any rate, of the cases included under the name of rheumatoid arthritis actually owe their origin to a specific organism. Attention is drawn to the muscular atrophy of rheumatoid arthritis, which is often independent of the mischief in neighbouring joints. Dr. Spender also describes minutely the disturbances in the skin which he has observed in patients suffering from this disease, and which he believes to be an important diagnostic sign in doubtful cases. A short paper on Rheumatoid Arthritis in Children by Dr. G. F. Still is interesting.

An excellent account of Rickets is given by Dr. Cheadle. The morbid anatomy and histological features are fully and clearly described, as are also the changes which the organs of the body generally may undergo in connexion with this condition. The author sums up his conclusions thus: "Rickets is a disease in which all the leading structures of the body suffer both from defective and from perverted nutrition. This is mainly the results of faults of diet, and consists in a deficiency of certain elements in food. ..... The chief and constant defect appears to be an insufficient supply of animal fat, and therewith also, in certain cases, a deficiency of earthy salts in the form of phosphates; at the same time, if animal proteid be deficient the disease is intensified. ..... The disease is modified in character by the concurrent existence of congenital syphilis or of scurvy."

Mr. Anthony Bowlby is the author of articles on Osteomalacia, Osteitis Deformans, Acromegaly, and Hypertrophic Pulmonary Osteo-arthropathy. Mr. Bowlby is well qualified to write on these conditions, and the only fault we have to find with the articles is that they are too short. Our knowledge of the latest of joint affections with the unwieldy name of hypertrophic pulmonary osteo-arthropathy has considerably increased since Mr. Bowlby wrote his contribution, the x rays and more necropsies having materially altered the views formerly held as regards its pathology.

One of the best articles in this volume is that on Gout, by Sir William Roberts whose researches on the chemical pathology of the "gouty state" have added so much to our knowledge. In his present contribution the author has summarised what is known of the symptoms, etiology, morbid anatomy, pathology, and treatment of gout, and, needless to say, the result is admirable. He lays stress on the conditions "uratæmia" and "uratosis." Uratæmia is not confined to gout, whilst uratosis is. Uratosis cannot occur, so far as is known, without coexisting uratæmia, but it is certainly true that uratæmia may exist for long periods without provoking the occurrence of uratosis.

Dr. Robert Saundby's contribution on Diabetes Mellitus is also a valuable one. His remarks on treatment are especially worth reading. Practitioners will do well to note his directions as to the management of diet. The pathology of the disease is well discussed, and the author's observations on the condition of the pancreas are an addition of considerable value. Phenyl-hydrazin is recommended as the best test for sugar.

Diabetes Insipidus is described by the late Dr. Ralfe whose death has deprived the profession of one of the best authorities on urinary disorders from a physician's point of view. He discusses the classification of diabetes insipidus by Willis and Parkes, and then refers the increased excretion of urinary water and of normal urinary solids respectively to two classes: (*a*) that in which the aqueous superflux is most marked—hydruria; and (*b*) that in which the drain of one or more of the solid constituents of the urine is persistent—polyuria. Each of these divisions is then fully described, showing a large amount of original observation and research.

Dr. Howship Dickinson writes an interesting paper on Lardaceous Disease. Especially interesting are the tables analysing the causes of this condition. The author's sketch of the etiology of the disease is based on a collection of 201 cases obtained from the post-mortem and case books of St. George's Hospital. Suppuration is presented in 167 of the cases—that is, in over three-fifths. Syphilis was the ostensible cause in twenty-three, or in about one-ninth.

Passing to the second division of this volume we come to "Diseases of Alimentation and Excretion." The "General Pathology of Digestion" combines the writings of the late Dr. Ralfe and Dr. W. Soltau Fenwick, whilst the "General Pathology of Secretion" is in the able hands of Dr. J. R. Bradford. Space will not allow us to comment on these two sections, but Dr. Bradford's remarks on the Thyroid Gland will doubtless receive considerable attention.

A good deal of original observation is found in Mr. Louis Cobbett's contribution on Shock and Collapse, whilst Dr. W. A. Wills's description of Diseases of the Mouth is fully up to date. Dr. H. D. Rolleston has evidently taken a good deal of trouble with the rather unsatisfactory subject of Diseases of the Œsophagus. With the exception of stricture of the gullet very little is known concerning such diseases, but œsophagitis deserves more attention than is usually devoted to it in ordinary text-books. Dr. Lauder

Brunton's writings on digestive disorders are well known; needless to say, therefore, that his article on Dyspepsia in this volume will well repay perusal, especially his remarks on treatment. Dr. W. Soltau Fenwick contributes a short paper on Dyspepsia in Childhood, to which subject he has devoted much attention. The subjects of Acute and Chronic Gastritis are dealt with by Dr. Brunton, and then follows a series of papers on rarer morbid conditions of the stomach by Dr. R. F. C. Leith. The diseases referred to are scarcely mentioned in most books. Dr. Leith gives a full description of their symptoms and pathology. He is to be congratulated on the success with which he has carried out his difficult duties. He first describes Phlegmonous Gastritis—a severe inflammation passing on to purulent infiltration of the stomach wall; next Membranous Gastritis; then the changes produced in the stomach by the ingestion of poisonous doses of various substances (chiefly metallic) or Toxic Gastritis; then follows Gangrene of the Stomach; and, finally, Cirrhosis of the Stomach.

Dr. J. R. Stocker contributes an able article on Seasickness. He proposes an entirely new theory as to the cause of this unpleasant malady; he says: "The difference, then, between a good sailor and a bad one appears to me to be mainly in the difference in their mode of respiration, and the cause of the complaint seems to be seated neither in the stomach nor in the brain, but in the throat."

From his own personal experiences Dr. Clifford Allbutt is able to provide an interesting discussion on Mountain Sickness, but the reports of Sir Martin Conway, Mr. Whymper, and Mr. Clinton Dent are duly recorded. Dr. Allbutt considers that deprivation of oxygen suffices to explain all the essential phenomena of mountain sickness. Dr. Allbutt also writes on Neuroses of the Stomach and Dilatation of the Stomach. His vivid descriptions of symptoms drawn from cases which have been under his own observation are particularly attractive, and both articles are of the highest merit, containing much original thought. We would especially draw the reader's attention to the pathology and treatment of dilatation of the stomach. Carefully compiled articles on Ulcer of the Stomach and Ulcer of the Duodenum, by Dr. Dreschfeld, follow and contain many practical hints as to treatment drawn from the writer's own experience. Dr. Hale White writes on Tumours of the Stomach, primary carcinoma naturally occupying most of the space. The difficult subjects of subphrenic abscess and diaphragmatic hernia are dealt with by Dr. Lee Dickinson. Dr. W. S. Playfair contributes a useful paper on Abdominal Diagnosis from a Gynæcological Standpoint. Mr. Frederick Treves's paper on Enteroptosis concludes this section of the book.

Diseases of the Peritoneum hold the next place, and Mr. Treves opens the subject by an excellent contribution on Acute Peritonitis. Mr. Treves's style of writing is well known, and this paper will in no way detract from his reputation as an author who knows what he is writing about and has the power of conveying his knowledge to others.

The next four articles are by Dr. Allchin: Acute Peritonitis of Undetermined Nature, Chronic Peritonitis, Tubercle of the Peritoneum, and New Growths of the Peritoneum. These are fully up to the standard of the other papers already noticed, and want of space alone prevents us from commenting on each of them separately. They will be found most useful for reference, containing, as they do, all the latest views on the subjects described.

In the section of "Diseases of the Bowels" are several well-written articles: Physiology of Fæcal Evacuation, by Dr. Lauder Brunton; Diseases of the Small Intestine, by Dr. H. D. Rolleston; Colic, by Dr. Hale White; Diarrhœa, by Dr. Lauder Brunton; Diarrhœas of Children, by Dr. Eustace Smith; Sprue or Psilosis, by Dr. Patrick Manson; Intestinal Obstruction, by Mr. Treves; Diseases of the Colon, by Dr. Hale White; and the Differential Diagnosis of Diseases of the Anus and Rectum, by Mr. Herbert Allingham.

Medical Climatology. By Dr. S. EDWIN SOLLY, Late President of the American Climatological Association. 1897. London: J. & A. Churchill. Pp. 470. Price 16*s*.

THIS is a very complete work on Medical Climatology, well written and containing a large amount of information. The whole subject is dealt with in a scientific spirit, and it is very far from being simply a guide-book or a mass of statistics. The subject matter is divided into three sections. The first of these deals broadly with the principles of medical climatology, and describes the close connexion of this science with physics, meteorology, ethnology, and "geographical pathology." The second section treats of the therapeutics of climate in relation to disease, and it is this section that will especially interest English physicians. As the author states in his preface, no attempt has been made under this head to prescribe special climates for special diseases, and it is obvious that as considerations so many and so different enter into the adaptation of the individual case to the particular climate, this would be a futile effort. The third section is devoted to a description of special climates as typified in selected resorts, and includes comparative and other tables.

The first division is brief, but to those who study climatology will prove interesting. The second section deals mainly with the climatic treatment of pulmonary tuberculosis; this is natural, as being the most important of these diseases in which climate has to be especially considered. We have never read in any other work a more complete consideration of the effects of climate upon this disease than is given by Dr. Solly. He discusses the subject upon a pathological basis and shows the effect upon the tuberculous process of pure air, sunlight, sunheat, temperature, humidity of the soil and air, variability of temperature, mobility of atmosphere, altitude, &c. The actual changes in the blood produced by altitude are then noted, and some remarks follow on the general therapeutic effects. The effect of climate upon pulmonary tuberculosis in its various stages is described, and general conclusions are arrived at as to the class of case suitable for various resorts. Other forms of disease influenced by climate are also described.

The section of the work devoted to an account of special climates is occupied mainly with a very full consideration of American climates, 182 out of 266 pages being thus taken up. The British Isles are dealt with in about eleven pages; most of our health resorts are, indeed, mentioned, but only a few lines are devoted to each. For English medical men who have patients who cannot leave England, this is disappointing. The part dealing with the Riviera is limited to five pages. The American climates, on the other hand, are most excellently described and illustrated with maps, the "relief maps" especially being most beautifully executed. Taking the book as a whole, we consider it to be a good work of reference on climatic resorts, as well as one conveying much information on climate considered from a scientific point of view.

Crime and Criminals. By Dr. J. SANDERSON CHRISTISON. Chicago: The W. T. Keener Company. Pp. 117. 1897. Price $1.

THIS book consists of a series of sketches of various types of criminals, and is illustrated with numerous copies of photographs of criminals and lunatics, and also diagrams of brains. Three essentially different classes of delinquents are described, viewed from a psychological standpoint—viz., the insane (defective in reason), the moral paretic (defective

in self-control), and the criminal proper (defective in conscience). Twenty-three cases are described illustrating the characteristics of criminals imprisoned for various crimes — from picking pockets to murder. For those interested in the so-called new science of criminology this book will have a considerable attraction. It is well written, although the American expressions occasionally strike an English reader as being quaint. For instance, Case 19 is a "safe-blower" now serving his third term in the penitentiary at Joliet; it is stated that the prison officers "regard this prisoner as one of the brainiest and smartest now in the prison."

Manual of Mental Diseases. By A. CAMPBELL CLARK, M.D. Edin., F.F.P.S. Glasg, Mackintosh Lecturer on Psychological Medicine, St. Mungo's College, Glasgow; Medical Superintendent of Lanark County Asylum, Hartwood. University Series. London: Baillière, Tindall, and Cox. 1897. Demy 8vo, pp. 484. Price 10*s.* 6*d.*

DR. CAMPBELL CLARK has no faith in the stereotyped apology with which so many books are prefaced, but tersely states that his work must stand or fall on its merits. Merits it has many, and defects not a few. The author makes the somewhat sweeping assertion that the pathology of insanity does not exist and has yet to be written. He has the courage of his opinions, and has ruthlessly excluded all reference to pathological data. In this respect we venture to think he has erred. Comparisons are proverbially odorous, but we could have wished that the author had followed more closely the lines of Dr. Clouston's work on Mental Diseases, in which the subject of pathology occupies a deservedly prominent place. The influence of the teaching of this distinguished alienist is evident throughout the present manual; his opinions are frequently quoted and as freely acknowledged. No doubt Dr. Clark is well advised in omitting from his work the highly speculative and exaggerated theories which have been advanced regarding the pathology of many mental disorders, but surely the pathology of such a disease as general paralysis is sufficiently well known and established to merit inclusion even in a practical text-book like this, which is professedly written in the main for the use of students. In its clinical aspect the work is deserving of much praise; the cases detailed have evidently been selected with care, but we cannot express unqualified approval of the dialogue method which has been adopted in several instances, nor can we say much in favour of the photographic illustrations.

The introductory chapters are devoted to the study of mental constitution and mental character, including mental health. Insomnia and its treatment are dealt with at some length, and this section will repay perusal. The part dealing with causation, prognosis, and treatment is distinctly good. Dr. Clark utters a note of caution regarding the lax way in which the causation of insanity is sometimes discussed, and states that, as a result, the general public imagine they know all about it, and are convinced that two factors account for everything—heredity and alcoholic excess. Under the heading of Treatment we find that his experience of the thyroid extract, except in cases of myxœdema, has been disappointing. The various recognised forms of insanity are lucidly discussed in detail, and their explanation is materially assisted by a series of carefully selected clinical cases and by a number of excellent charts. Perhaps the best chapter is that on Evolutional and Dissolutional Types. Here the author speaks with authority, and he gives a remarkably clear exposition of the mental disorders which are liable to occur in earlier and later life—those due to the physiological stress and strain of puberty and adolescence and those incidental to the approach of the climacteric and the decadence of old age. Not less important are his remarks on the insanities of pregnancy and lactation and also on puerperal insanity. The practical value of these chapters is very considerable. The mental disorders associated with various forms of bodily disease are fully dealt with, the legal and civil relationships of insanity are pointed out, and copies of the various lunacy forms in use in England, Scotland, and Ireland are appended.

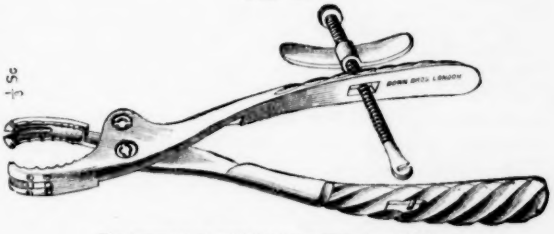
The volume is handsomely bound, well printed, and possesses a carefully prepared index. The book is lucidly written and the meaning clearly expressed. It is intended for the use of general practitioners and students, and to the general practitioner we cordially recommend it. He will find it handy and useful for reference and of much practical value.

New Inventions.

LION FORCEPS FOR USE IN SCREWING, WIRING, AND OTHER OPERATIONS ON BONE.

WIRING, screwing, and other devices have been successfully employed by Mr. Arbuthnot Lane and others for the purpose of securing correct apposition of fractured bones and their retention in this position. The results so obtained encourage a further use of these methods and particularly their application to fractures in the neighbourhood of joints. The precision to be attained by these methods is more fully recognised when accurate drilling previous to the deposition of wires and screws is made easy. To meet the requirements in such operations I have devised the above-mentioned instrument which has been referred to by Mr. Lane in his paper in the *Clinical Journal*. Essentially the forceps is a modification of Farabœuf's lion forceps and can be used for all the purposes of a lion forceps. It is further fitted with a detachable approximating screw and an additional limb suitable for the passage of screws or, in certain cases, of wire. A drill grooved along its length with a trocar point is adapted for use with the instrument. Both jaws of the forceps are sawn longitudinally so as to allow wire to be passed free of the forceps. The upper jaw is drilled with holes in two series, the one series being adapted for larger and the other for smaller bones. By this arrangement it is possible to drill a hole in any position up to 40° from the vertical in either direction. This varying angle of impact is obtained by conical holes on either side of the central saw slit. The saw slit is also conically enlarged at suitable points

FIG. 1.



The forceps used with the two narrow-jawed blades.

FIG. 2.

The additional or third limb with wide jaws.

to accommodate the drill without allowing it to slip. The third limb (Fig. 2) has a large forked extremity which will allow of the manipulation of any drill and screws. The forceps can be used either for drilling the two bones in position and subsequent wiring without relaxing hold, or for boring a single piece of the fractured bone. It is so arranged that a wire can be passed from the central slit into the holes in the bone which have been drilled through the side holes of the forceps. If, therefore, one of these lateral holes of the forceps is used to direct the drill, the wire can be adjusted without removing the forceps. The main points connected with the forceps are: 1. A firm grip can be obtained on one or more fractured fragments, and the forceps retained in position by the approximating screw. 2. The drill can be passed precisely, rapidly, and without fear of slipping. 3. The wire or screw can be passed and adjusted without removing the forceps. 4. The instrument can be used as ordinary bone forceps.

The instrument is made by Messrs. Down Bros., to whom my thanks are due for the care they have expended on its manufacture. E. A. PETERS, M.B., B.C.

AN IMPROVED PINCE-NEZ.

THIS new form of pince-nez—the "Revluc"—should recommend itself to those who have a preference for "glasses" of this description. As will be seen from the illustration, placquets are affixed to the periphery of the eye frame next the nose, and are automatically adjusted by means of a spring bridge. The pressure on the nose is firm, but not great enough to cause discomfort or to mark the skin; and there is no tendency of the glasses to tilt forward, an important

FIG. 1.

Closed.

consideration when, as in the case of astigmatism, the lenses require to maintain a definite position with respect to the eye. A two hours' ride on a bicycle over a moderately bad road is a severe test for any kind of pince-nez, but this the Revluc has stood without becoming displaced. The combination of bridge and horizontal bar strengthens the frame without appreciably increasing its weight, and at the same time ensures the centres of the lenses being always properly

FIG. 2.

Open.

adjusted to the distance between the pupils. The illustrations will show the neatness of appearance and simplicity of construction perhaps better than words; but we may point out that the absence of spiral springs, which have a tendency to collect dust always difficult to remove, enables the frame to be kept clean with little difficulty. The Revluc is manufactured by Mr. George Culver, White Lion-street, Pentonville, London.

THE JENNER MEMORIAL MEDAL.

ON the occasion of the Jenner Centenary it was thought, as was pointed out at the time by the President, that the Epidemiological Society should take some steps which, while celebrating an event of such importance to preventive medicine, would at the same time do something to promote the study of epidemiology at the present time. It was finally decided to found a medal in memory of Edward Jenner, to be conferred by the society from time to time for work of great merit, and a sub-committee, consisting of the then President (Mr. Shirley Murphy), Sir Richard Thorne Thorne, K.C.B., F.R.S., Fleet-Surgeon Theodore Preston, R.N., and Dr. Frank Clemow, together with the treasurer and honorary secretaries of the society, was appointed to consider the design of such medal. This sub-committee, which, on the retirement of Mr. Shirley Murphy from the presidency, had the further advantage of Surgeon-Colonel Lane Notter's advice and experience, finally recommended the society to accept a design submitted by Mr. Allan Wyon, F.S.A., who is now engaged in executing the necessary dies. In the next volume of the Transactions of the society it is hoped that a facsimile of the design for the medal will be presented.

It was thought by the society, in founding a memorial of this nature, that the medical profession in general should be afforded an opportunity of subscribing to the original cost, and it is a matter for congratulation that the response to the appeal which the society made through the medical journals has enabled the dies to be procured at a merely nominal expenditure on the part of the society. The medal, too, from the fact that it was founded by subscription from many parts of the world, cannot fail to be more highly appreciated by the recipients of it than would have been the case had it been founded by the society alone. Below is the list of the subscribers to the fund.

List of Subscribers to the Jenner Memorial Medal.

The Epidemiological Society of London.
Dr. Henry Armstrong.
Dr. Robert Barnes.
Mr. F. Blackwell.
Dr. F. T. Bond.
Dr. W. A. Bond.
Sir William Broadbent, Bart.
Mr. M. Brownfield.
Dr. H. Timbrell Bulstrode (Hon. Sec. of Epidemiological Society).
Dr. Claremont.
Dr. F. Clemow (Cronstadt).
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Mr. Bolton Corney (Fiji).
Dr. Andrew Davidson.
Dr. Dickson (Constantinople).
Dr. Donnett, R.N.
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Dr. W. W. E. Fletcher.
Mr. Andrew Fuller.
Dr. E. W. Goodall.
Dr. E. Goddard.
Surgeon-General Sir C. A. Gordon, K.C.B., Q.H.P.
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Dr. Hare.
Dr. Harrison.
Dr. E. Hibberd.
Dr. W. F. Hingston.
Surg.-Gen. Sir Anthony Home, K.C.B., V.C.
Dr. E. O. Hopwood.
Dr. W. Hunter.
Mr. V. Jaynes.
Dr. Joseph von Koröse (Budapest).
Dr. J. Little (Dublin).
Mr. J. Loane.
Dr. G. B. Longstaff.
Dr. J. C. McVail.
Mr. G. A. Miskin.
Mr. T. Mitchell.
Dr. Müller (Budapest).
Mr. Shirley Murphy.
Surgeon-Colonel J. Lane Notter (President of the Epidemiological Society).
Mr. J. Norton.
Sir James Paget, Bart.
Dr. Louis Parkes.
Dr. Franklin Parsons.
Dr. J. F. Payne.
Fleet-Surgeon Theodore Preston, R.N.
Dr. Pye-Smith.
Mr. T. F. Rogers.
Mr. M. G. Roundtree.
Dr. Saltet (Amsterdam).
Dr. Sansom.
Sir Edwin Saunders.
Brigade-Surgeon J. B. Scriven.
Dr. Edward Seaton.
Sir John Simon, K.C.B., F.R.S.
Dr. Smart.
Dr. Sonsino.
Dr. Sweeting (Hon. Treasurer).
Dr. Theodore Thomson.
The late Sir J. Tholozan, K.C.M.G. (Teheran).
Sir Richard Thorne Thorne, K.C.B., F.R.S.
Mr. Thomas Wakley, Jun.
Dr. J. W. Washbourn.
Mr. S. Welsh.
Dr. William Williams.
Dr. S. Wheaton.
Dr. B. A. Whitelegge.
Dr. J. T. Wilson.
Dr. C. W. F. Young.

SHEFFIELD ROYAL INFIRMARY.—The annual meeting of the Sheffield Royal Infirmary was held on Sept. 1st, Sir Alexander Wilson, Bart., the retiring Master Cutler, being in the chair. The report stated that next month—namely, on Oct. 4th—the infirmary will have completed a century of its existence, and that the new buildings erected in commemoration of the centenary year are approaching completion. Last year, on the occasion of the Queen's visit to Sheffield, she was graciously pleased to confer upon the institution the title of the Sheffield Royal Infirmary. The house surgeon's report showed that 1869 in-patients, 4103 out-patients, 12 933 casualties, and 2190 dental cases had been treated during the year. The number of beds now available is 202, of which 44 are devoted exclusively to children's cases. The amounts received from the Hospital Sunday and Hospital Saturday Funds were £1095 and £722 respectively. The expenditure had exceeded the ordinary income by £1198. One of the speakers mentioned that something like £5000 was still required to complete the centenary commemoration buildings and the furnishing.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 11, 1897.

THE meeting of the British Medical Association in Montreal, or, rather, the opening address of the distinguished President, Dr. RODDICK, Professor of Surgery in the McGill University, has called forth a somewhat severe criticism on the Association from the *Times* which cannot altogether be disregarded. The address and the criticism form an interesting illustration of the different conclusions to which men may come who are presumably equally able and disinterested, showing, as most such illustrations do, the importance of difference of standpoint and of the colour of the medium in which the object is seen. The address, or, rather, that portion of it which seems to have called forth the uncomplimentary side of our contemporary's criticism, was spoken from the President's chair and dealt naturally enough with the noble objects of the Association, its impartial constitution, its accumulating capital, and its great numbers "of earnest men pitted against false dogmas and ever battling for the truth." For such an Association the President could see no future but one of increasing power and usefulness. It was beyond his conception that any age could come which would cease to feel its benign and mighty influence making for the amelioration and elevation of mankind. He even expressed his belief that it would be an important factor in bringing to a successful issue that great scheme of Imperial Federation which now exercises the mind and hearts of the leading statesmen of the empire. What must have been the President's feelings when he opened the *Times* of Sept. 1st to learn that all his eulogy of the Association and its power was a mistake—"the truth being that the absence of such power and influence is one of the most remarkable characteristics of the organisation, and one which has often occasioned much perplexity to those who have been called upon to consider its proceedings." Nor is this the worst that the candid article in the *Times* had to say, for from other passages we learn "that probably no statesman was ever influenced by its [the Association's] views with regard to any matter of legislation," that it "has made some microscopic pecuniary grants for the promotion of scientific research and that nothing very important has ever come of them"; that even at the annual meetings of the Association recreation s generally preferred to science; and that all the work of the profession, whether scientific, charitable, or administrative, is done by independent societies. No English President, concluded the *Times* in leaving that aspect of the question, could have employed the language which Dr. RODDICK used "without, at least, being suspected of irony."

The weakness of the profession is its want of cohesion and concord, of organisation and unity. There are not wanting signs of still more and graver cleavage into sections and coteries. The one great and indivisible rofession is to be broken up into bits or into classes. It is a responsible thing in the face of such facts to disparage the greatest association of the profession, and we cannot but ask ourselves what explanation can be offered of such disparagement, and, if possible, what excuse. We have never been blind admirers of the Association. There have been many things in its history which have been unworthy of its very greatness—partialities, personalities, timidities, and favouritisms. It has not always had a soul to call its own. Last year two of the oldest members of the Association, who have since respectively been solaced by the gift of its gold medal, were allowed to drift out of the position of direct representatives in the General Medical Council when a little early and firm support from the Association of which they had been lifelong supporters would have secured their honourable return. Of late years the annual meetings have been less attractive than of old, not so much because of the prevalence of "recreation"—a most legitimate and desirable part of the duty of gatherings of scientific men—or because of the subordination of medical science to so-called medical politics, but because of the abstention from the councils of the Association of those whose influence and whose character would have given them a status from which to deal alike with the demands of medical politics, of medical science, and of medical ethics.

It is impossible to deny these facts with regard to the Association or to shut our eyes to their gravity. But when all has been said we cannot deny the usefulness of the Association or doubt that it has materially affected both medical and sanitary legislation and medical science. Its numbers are great. If its deliberations have not directly affected the laws of the nation to the extent that we might naturally have expected they have at least educated the rank and file of the profession and so, in an indirect manner, have instructed the public at large; and from the position of an improved popular opinion to an improved legislation is generally but a short step. The Association includes nearly half the profession, and even if it never realises the ideal which Dr. RODDICK has painted it necessarily has before it an important future. But it must work conscious of what that future is to be. It must be calm and well ordered. It must have set purposes and a defined scope. In this way its members may know what to expect from it, and by insisting upon taking an active part in its conduct may vivify it and mould it to greatness.

WHAT, we wonder, will Lord HERSCHELL and the other members of the defunct Royal Commission on Vaccination think of the manner in which their posthumous Sixth Report has been presented to Parliament and the public. Of the 187 witnesses whom the Commission examined during its seven years' labours this huge blue-book contains the minutes of evidence of no less than 83. It runs to nearly 800 double-columned and closely printed foolscap pages, and contains, in addition, many maps and diagrams. It will hardly be believed that such a volume has been issued by Government without an index of any sort to help Members of Parliament, or the medical profession, or the anti-vaccinationists, either to digest its contents or to find in it reference to any particular point regarding which they may wish to consult it. It is true that the "Final

Report (issued many months before this one) was without an index, but the difference between the final report and this report as regards need for guidance is greater than the difference between the king's highway and the maze at Hampton Court. The previous volumes of evidence were much less in size than this one—the four contained amongst them the evidence of only about a hundred witnesses—but each of them was furnished with an ample and excellent analytical index.

What may be the cause—reason there can be none—for this extraordinary neglect we do not know. Most certainly it has not been want of sufficient time to prepare an index, for the evidence recorded in the volume began in November, 1891, and ended in December, 1893. That is nearly four years ago. Moreover, the preliminary note, the so-called "Report," in which the Commissioners submit the evidence to HER MAJESTY, is dated Feb. 14th, 1896, or more than a year and a half ago. In the latter part of the last Session of Parliament questions were repeatedly asked as to when the Report and Appendices would be published. In reply a time was mentioned, and after the promised publication was considerably overdue the matter was again made the subject of question and answer. Now, at length, when Parliament is not sitting, and no question can be asked, the huge tome is placed before the public in such a fashion that the irate reader would be glad to know on whom the responsibility for the form in which it appears rests.

It is simply out of the question to permit this volume to be placed on the library shelves of the country unaccompanied by a good index, and if none is issued in supplement before Parliament meets steps will have to be taken then to press the Government to give the necessary order. We need only mention that the list of witnesses, in addition to containing the names of various leading opponents of vaccination, includes those of Dr. BARRY, Dr. BIRDWOOD, Dr. J. H. BRIDGES, Dr. MONCKTON COPEMAN, Dr. R. J. B. CUNNYGHAME, Dr. HIME, Dr. HUSBAND, Dr. KLEIN, Mr. MCFADYEAN, Dr. J. C. MCVAIL, Dr. OGLE, the late Dr. BEAVAN RAKE, Dr. FREDERICK TAYLOR, Dr. WHITELEGGE, and Dr. SIMS WOODHEAD. No doubt it will take a good deal of trouble to prepare an index, which, judging from those of previous volumes, ought to run to some fifty pages or thereabouts. It cannot be supposed that the Commission would spend two years listening to evidence, and give the eighty witnesses all the labour of preparing it, and yet would in the end fold its hands and declare that it could not supply an index of what these witnesses had said. The matter is justifiable from no point of view. It is a sheer waste of paper and printing and lithographing to send forth a report (costing 14*s.*) without its ordinary and necessary accompaniment. And in the interests of the literature of science it is essential that even yet an index should be published. We strongly suspect that when the Commission ceased to exist as such there must already have been made some more or less complete digest of the contents of this volume. This, indeed, is bound to have been the case, for the Final Report could not have been prepared without it. This digest must be pigeon-holed somewhere. But when the Commission was dissolved, its Final Report being issued, it seems to have been nobody's business to attend to the issue of a great bulk of valuable material on which that Report was largely based. For it must be recollected that not only is there this mass of evidence taken directly by the Commission, but there are also the very important special reports on the small-pox outbreaks which occurred in Dewsbury, Gloucester, Warrington, London, and Leicester, and which were investigated by Dr. SIDNEY COUPLAND, Dr. SAVILL, and Dr. LUFF. Then, also, Dr. THEODORE DYKE ACLAND made inquiry into many cases of alleged injury from vaccination. All this has to be published and all this has to be indexed. In so far as these special reports will be much less voluminous than the minutes of evidence now issued their indexing will be easier, but none the less the duty should not be left to the public. If there is now no one responsible for all this work then it is imperative that some one should forthwith be appointed. The delay that has already taken place is much to be regretted, but that the long-waited-for reports should in the end be launched like ships without rudders or compasses is indefensible.

THE Commissioners of Prisons are to be congratulated on the many satisfactory features of the present report. It breathes a spirit of progressive and enlightened policy which augurs well for the future. Amongst other things which have occupied the attention of the Board may be mentioned the treatment of juveniles on special lines, the segregation of first offenders, the differentiation of the occasional from the habitual criminal, the care and treatment of the weak-minded, and the better preparation of convicts for liberty. All these are steps in the right direction. The number of training schools for prison officers has been increased, and a scheme for the future organisation of aid societies throughout the country has been framed. The numbers of the prison population continue to decrease, and there has also been a satisfactory diminution in the number of the criminal insane. The vexed question of insanity in prisons, on which of late so much attention has been concentrated, and regarding which much ignorance has been displayed by writers innocent of any practical knowledge of the subject, bulks largely in the remarks of the Commissioners and also in the notes of the medical inspector. The matter is discussed at considerable length, and reports from the governors and medical officers of the various convict prisons are given, which should tend to allay the public apprehension concerning the alleged injurious effect of penal servitude on the mental health of prisoners. Anyone who cares to peruse the factors of insanity as set forth in the annual reports of the Commissioners in Lunacy cannot fail to observe that the convict is shielded from the operation of the most dangerous of the insanity-producing causes. His life is regular, his diet is wholesome, he is not over-worked, and his labour is, for the most part, done in association and in the open air; he has a plentiful supply of books, and he is under continual medical supervision. All these are conducive to sanity, and without doubt exercise a beneficial effect on prisoners who are predisposed to mental deterioration. It must be borne in mind that many of these men have led vicious lives, and have contracted disease,

the insidious and damaging effect of which on the nervous system is well understood; a proportion also are hereditarily tainted, the degenerate offspring of degenerate parents. Possibly the strain of imprisonment on the nervous system is greatest during the first months of imprisonment—during the period of separate confinement. Nowadays a sentence of penal servitude is the measure of punishment awarded for a crime of some magnitude; in connexion with this, the period of suspense before trial, the excitement of the legal proceedings, the subsequent reaction, and the prolonged process of introspection which necessarily follows, are calculated to exercise a somewhat disturbing effect on the higher levels of the nervous system, and in persons of unstable nervous organisation the results may in some instances be unfavourable. The Commissioners, however, with commendable forethought, have foreseen this contingency, and have directed that any prisoner who shows the slightest premonitory symptoms of nervous disorder shall be specially treated, and, if necessary, removed to a prison where he may have the benefit of associated outdoor labour. It is apparent that the authorities are displaying an anxious solicitude for the protection of the criminal in all that pertains to his mental well-being.

Dr. SMALLEY, the new medical inspector who succeeded to the post on the resignation of the late Dr. GOVER, contributes an interesting summary of the year's work in the medical department. In the local prisons, excluding executions, suicides, and one accident, the number of deaths was 104, giving a death-rate of 7·4 per 1000, which is slightly higher than that recorded last year. Death supervened in less than a month after reception in 41 cases, or 2·9 per thousand. This is more than a third of the total number of deaths, and indicates the wretched state of health in which prisoners are often received into prison. In 45 cases pulmonary disease in one form or another was the cause of death. Heart disease proved fatal in 18 and kidney disease in 12 instances. There were five suicides. Considering the large number—namely, 175,604—of all sorts of men and women received during the year this number is small and speaks well for the vigilance and supervision exercised. Seventy-five prisoners were released on medical grounds; they include the cases of 44 females released on account of advanced pregnancy. Dr. SMALLEY deals with the question of insanity in prisons in a clear and convincing manner. He shows how futile it is to attempt a comparison between the rate of lunacy in the prisons and that of the general population, the conditions being so different and so unequal. The number of cases of insanity in local prisons was 380, a decrease of 98 as compared with the number last year; of this number, however, 216 consisted of prisoners either unconvicted or remanded for observation, or found insane on arraignment, or found "guilty but insane" at their trial. Hitherto it has been the custom to include these cases and also the cases of prisoners found insane in prison after conviction in one table—a method which showed an unduly large proportion of insane to the prison population. Hence arose in great measure those erroneous impressions based on false deductions which tended to raise alarm in the public mind. It is neither reasonable nor fair to include the cases of unconvicted prisoners as cases of prison insanity, and, accordingly, they have been excluded this year from the insanity statistics. The remaining 164 cases were convicted and sentenced; of these, 121 were found insane on reception and 43 subsequently. It appears from this that many persons are convicted and sent to prison, their insanity being either ignored or undetected at their trial.

In the convict establishments fifteen prisoners were certified insane and removed to asylums. There were no suicides. The death-rate was 9·7 per 1000. An important feature, from a medical point of view, was the decision of the directors to send all weak-minded prisoners, or any showing a tendency to mental deterioration, to Parkhurst Prison. The scheme seems to be working well; they are under special supervision and are employed at labour suited to their physical and mental condition. On their release efforts will be made to assist them and give them a helping hand. This is a wise, humane, and judicious decision, for such men frequently find their way into prison. On account of their mental infirmity they are unable to obtain suitable occupation, and in the stress and hurry of the busy world they are cast aside, and, almost of necessity, have recourse to acts of an anti-social nature. The prevention of crime and the treatment of criminals are important and far-reaching questions which are being made the subject of inquiry and investigation by many able workers, both in this country and abroad, and it is pleasing to note that the Prison Commissioners are addressing themselves to the work in a scientific and progressive spirit.

Annotations.

"Ne quid nimis."

EASTBOURNE AND VACCINATION.

THE curious muddle into which the Eastbourne guardians have got with regard to vaccination affords another illustration of the need for immediate legislation on the subject. Some months ago a vaccination officer was advertised for and appointed. It seems that he had been told by the board that he would be supported in doing his duty. Having prepared a list of defaulters he wrote to ask for instructions, and the committee before whom the request was laid resolved "that further consideration of the letter be deferred for two months." A local newspaper reports that at the guardians' meeting the Rev. J. W. Parrington said the board had repeatedly stultified itself by refraining from carrying out resolutions which it had arrived at to enforce the Vaccination Act, and he opposed any further stultification. At the same time the vaccination officer was understood to be likely to take legal proceedings against the guardians if they failed to support him in carrying out the Act. On the other side it was urged by Mr. Luck that although the vaccination officer "was appointed to do the work the board had no right to enforce the law; it was optional." He also made the remarkable assertion "that the Royal Commission unanimously decided that prosecutions should be discontinued," and when a statement of this sort was called in question by the clergyman who had previously spoken, Mr. Luck's retort courteous was that when Mr. Parrington understood what he was talking about he would listen to him. Mr. Luck himself

seems quite unable to understand the difference between prosecutions and repeated prosecutions. He further intimated to the guardians that the Local Government Board were all medical men and pecuniarily interested in vaccination. Moreover, he himself had nailed his colours to the mast, and Jenner had got £30,000, and the death-rate of Eastbourne was the lowest on record, "and why," he asked, "not let well alone?" After all this valuable information and cogent reasoning, the determination to defer the matter for two months was carried by nine votes to seven, though to an outsider it is not clear why this should be described as a "victory of anti-vaccinators." The underlying feeling appears to have been that Eastbourne cannot afford to let the truth be known about its neglect of vaccination, and that, at least, the summer visitors might be allowed to depart before prosecutions were begun. This is a dangerous policy. The longer the neglect the worse may be the punishment. Gloucester, like Eastbourne, purported to trust to sanitation. Mr. George Newman, secretary to the Gloucester Anti-vaccination Society, declared to the Royal Commission that Gloucester was a very sanitary town, one of the public bodies in the town also professed to the Commission its trust in sanitation, and a book was written to show how little vaccination there was in Gloucester, and how little small-pox. Then came Nemesis under the guise of small-pox, and at once the tune was changed. Gloucester was no longer sanitary but highly insanitary, and that cry has been kept up ever since. He is happily wise who is wise by the experience of others, but Eastbourne refuses to be wise. The schoolmaster small-pox is likely to have no lack of pupils when the time comes, and as in the past, the children, alas, will have to pay the penalty of death or disfigurement for the folly of their parents.

ATTENDANCE AND DEATH CERTIFICATION BY DRUGGISTS.

AN inquest at Redruth, held by Mr. E. L. Carlyon in reference to the death of Florence Mary, daughter of Elizabeth Watling, discloses a state of matters as regards the medical care of children, and the ease with which registrars and sextons are satisfied that cannot too seriously or too soon engage the attention of the Registrar-General and the Home Secretary. Mrs. Watling had had thirteen children. A midwife, Mrs. Tirrell, not a certificated nurse, had attended her on five occasions. The present child, born on July 27th, was a fine child at birth. On one occasion the child was still-born and she gave a certificate in the following terms: "I hear by Sertifey that Mrs. Watling was confined of a still born mall child. Susen tirrel." She took the body and the certificate to Mr. Trevena, sexton at Treleigh. She had been a midwife thirty-five years and it had been her custom to give certificates like that. She did not think she had attended more than ten such cases, which she disposed of as follows: She had "given" seven to Mr. Remfry, Redruth parish church sexton, and two had gone to Mr. Henry Peters at the East-end Cemetery. "She had permission from Major Hayes, a magistrate, to give such certificates." A druggist, whom the mother called "Dr. Rowe," had always attended her (Mrs. Watling's) babies—that is, if they required more attendance than that of the midwife. She gave a list of three cases so attended by "Dr. Rowe,' and said that he gave certificates. In the present case he suggested that she should call in Dr. Laurie, but she did not, for "Dr. Rowe" had always attended her babies, and he did not say he was not qualified to attend or to give a certificate. The day after suggesting that Dr. Laurie should be called Mr. Rowe sent another medicine and justified his doing so on the ground of humanity. When the child died he gave a certificate—or, as he preferred to call it, a statement—of death from diarrhœa. Medical evidence was given by Dr. Permewan, who had made a post-mortem examination and found death to be due to diarrhœa. He disapproved of the diet of the child—boiled bread and baked flour and milk. One of the medicines supplied by the druggist was syrup of poppies. In his opinion this implied want of medical knowledge, and he would have blamed himself for ordering it for a child of that age unless he had seen the child and assured himself that the lungs were clear. The coroner spoke in terms not too severe of Mr. Rowe. He spoke of him as a "positive danger to society," though he had been twice warned, and once proceeded against, by the Apothecaries' Society. The jury, some of whom appeared to sympathise with Mr. Rowe, found that the child died naturally. The *Daily Mercury* and the *Western Morning News* show by their full reports their sense of the significance of the facts—we may say, the system—which the coroner has here exposed. But the responsibility rests elsewhere.

SALT IN THE NAVY.

THAT it is only within the last few days that the Admiralty have sanctioned the use of salt in the bluejacket's daily allowance of food will come as a surprise to not a few. Hitherto if the sailor required salt he had to purchase it. It was practically the only condiment omitted from the ordinary cruet list, and the reason of this omission until quite lately is not far to seek. In the old days of wooden ships Jack's diet consisted largely of salted meats, and salt on the table would have been an obvious, and most probably an irritating, superfluity. But owing largely to the increased facilities and improvements in the machinery for preserving meats without the use of salt or added substances at all, as well also to the fact that our modern warships are seldom many days' steam from port, "salt horse" has, greatly to the increased comfort and well-being of our sailors, practically become a thing of the past—at any rate, as an exclusive article of diet. Salt is now, therefore, a necessity wherewith not only to season food, but, as experiments have shown, to assist very materially in its assimilation. As is well known, salt promotes the diffusion of fluids through the membranes, and it very distinctly increases the solubility of certain nutrient substances. It has been said that the entire withdrawal of common salt from food would be fatal, an absolutely saltless diet speedily leading to albuminuria. This concession, therefore, is of the utmost importance, and it is a matter of surprise that the Admiralty have been so tardy in granting it.

SYPHILIS TREATED WITH COLEY'S MIXED TOXINS.

DR. C. S. EVANS and Dr. C. M. Paul have published in the annual report of the Cincinnati Hospital a series of fifteen cases of syphilis treated with Coley's mixed toxins, the patients' symptoms including such varied manifestations as primary chancre, secondary eruptions, broken and unbroken gummata, and condylomata lata. The treatment was in each instance commenced with the minimum dose of two minims, diluted with an equal quantity of water and injected deeply in the muscles of the buttock with an ordinary hypodermic syringe; the side was alternated each time because of the soreness caused; the injection was given every other day, and as a rule the dose was increased at each injection. The maximum dose given was fourteen minims, and it was noticeable that this dose could be continued day after day without any more disturbance than followed the initial dose of two minims. As a rule, some pain followed the injections, but this lasted only a short time and was succeeded by a soreness which persisted for two or three days, but was never so severe as to compel the

patient to remain in bed. The most pronounced symptom following the injections was malaise, which was felt very quickly, and, as a rule, was peculiarly depressing, but disappeared in a few hours. Headache, diarrhœa, high temperature, and pains in the bones were also met with, but there was no formation of abscesses in connexion with any of the 237 injections which were given, and apart from the symptoms above noted there were no unpleasant after-effects, a thing which cannot be said of mercury. Two of the fifteen patients were treated with mercurial inunction and one with iodide of potassium before the toxin was administered. The remaining twelve were treated with toxin only. The duration of the disease in these cases was respectively five months, seven years and a half, three months and a half, two months, four months and a half, five years, four months, four months, perhaps nine weeks, six months, seven months, and five months. The duration of the toxin treatment in the cases taken in the same order was respectively twenty days, two months, twenty-seven days, thirty-nine days, fifty-seven days, thirty-two days, thirty-five days, thirty-nine days, twenty-seven days, thirteen days, twenty-one days, and twenty-one days. Ten of the twelve patients had ulcerated chancres eight of which were entirely healed and two were almost healed at the end of the treatment. In every case the eruption disappeared, the mucous patches healed, the enlarged glands became smaller, and the patient gained flesh and strength. In conclusion, however, Dr. Evans remarks that the worth of toxin is as yet mere conjecture, and that absolutely nothing can be said as to the ultimate results.

MODERN ALCHEMY.

THE sea-serpent story is beaten. Silver has been transmuted into gold by the simplest possible process, and this at a time when currency is a most vexed question, in which America more than any other country is interested. It is not, therefore, a matter of intense surprise that the transmutation has been effected by an American investigator. He has converted Mexican dollars (why did he not start with pure silver?) into an ingot consisting of a mixture of gold and silver more than nine-tenths "fine," from three-fifths to two-thirds of the precious metal being found to consist of pure gold. Mexican dollars, by the way, contain also copper. All that is required for this transmutation is extreme mechanical pressure. There can be no doubt of America's capacity to supply an abundance of this commodity. Pressure acts, doubtless, upon the silver atoms and gives them a greater density, so that from 108 the atomic weight shoots up to 196. That is, starting with a white metal—namely, silver—of a specific gravity of 10, the effect of an enormous pressure is to increase this gravity by about double (the specific gravity of gold is 19·5), the resulting mass changing colour—presenting, in fact, all the appearance as well as the properties of the noble yellow metal. Bimetallism is doomed and America's financial superiority as a nation amongst nations ensured.

THE MANCHESTER CORPORATION AND CARRINGTON MOSS.

THIS estate, of 1100 acres, was bought for a sum of £38,000, by the Manchester Corporation in 1886, to make provision for the disposal of refuse and other matter from the closet system of the southern part of the city. The greater portion was wild boggy moss-land which yielded annually a few brace of grouse. A sum of £80,000 was laid out for light railways, roads, drainage, rolling stock for the railway, buildings, and other necessary works. An estimate prepared by the city surveyor places the present value of the property at some £12,000 higher than its cost to the city. "The whole moss has, in fact, been developed into highly cultivated farm and garden land." Refuse, chiefly nightsoil, is taken daily by the Ship canal to a wharf conveniently near, lifted from the barges into tanks and taken to various points for distribution over the ground. The Cleansing Committee farm about 400 acres and the remainder is let off to tenants, who are supplied with manure. Since 1890 more than 425,000 tons of collected matter have been distributed over the moss, and by this time the power of absorption by the soil has necessarily somewhat diminished. In future twenty tons of manure per acre will be supplied annually, and the surplus will be taken to Chat Moss, which was recently purchased. At the outset the bog land was thoroughly drained, and, notwithstanding the constant additions of top dressing, there is still a well-defined sinking of the land. In face of the general agricultural depression it is a novelty to learn that "a considerable profit has for some years been made on the working of the farm." Not far from the homestead seventy acres are in charge of the Parks' Committee, where golden elders, acres of rhododendrons, with other shrubs and trees, together with flowers in abundance, are grown for use in the parks and for the decoration of the city squares. These results of the "dry method" are not attainable under the water-closet system which culminates in the scheme for a culvert sixteen miles long, to cost before it is done probably £300,000, in order to provide for the waste of hundreds of thousands of tons of matters having manurial value.

THE LATE DR. WILLIAM GARDNER.

A SURVEY of the progress of medicine and surgery in Australia shows that the present advanced state of development is due to the talents and industry of a number of workers, among whom the late Dr. William Gardner deserves honourable mention. Although the greater part of his life was passed in Australia he was not of colonial extraction, having been born in Birkenhead, Cheshire, in November, 1846. He went with his parents to South Australia in 1850, received his early education in Adelaide, and was subsequently employed for some years in the English and Scottish Bank in that city. Having then made up his mind to enter the medical profession he spent the years 1870, 1871, and 1872 at Melbourne University. He then returned to this country and entered at Glasgow University, where he took honours in most of the classes and graduated as M.B., C.M., with first-class honours, in 1874. Immediately after graduating he went back to Australia, and held resident appointments at the Adelaide Hospital from 1875 to 1877. In 1876 he took the degree of M.D. at Glasgow University, his thesis, which was on Hydatid Disease, being awarded commendation and a gold medal. From 1879 to 1891 he was surgeon to in-patients at the Adelaide Hospital. In 1883 he was elected President of the South Australian Branch of the British Medical Association; in 1887 he was appointed lecturer on surgery at the Adelaide University; in 1889 he was instructed by the Government of South Australia to prepare a report on hospitals in India, and the substance of it was published in the *Australian Medical Journal* during 1890. He spent the year 1891 in Europe, and on returning to Australia in the beginning of 1892 he settled in Melbourne, where he was appointed honorary surgeon to the Hospital for Sick Children in 1893, and founded the *Intercolonial Quarterly Journal of Medicine and Surgery* in 1894. At the Intercolonial Medical Congress, held in 1892, he was President of the Section of Surgery. In the midst of his scientific and literary activity, to which was added the responsibility of a busy practice, his health began to give way, and in the end of 1895 he had a severe cerebral seizure, after which it was found that he suffered from considerable arterial degeneration and cardiac

hypertrophy. He spent most of 1896 travelling in Europe, and about March of the present year he commenced his homeward journey to Melbourne, where his friends expected him to arrive about the middle of April, but to their profound grief he died at Naples. Dr. Gardner's contributions to medical and surgical literature were valuable and very numerous; his favourite subject was the treatment of hydatid disease, for which he adopted Lindemann's operation, and proved its advantages by a series of successful cases.

THE DISPOSAL OF IMPORTED BAD EGGS.

BY some remarkable oversight the Port Sanitary Authorities permitted a cargo of bad eggs to be brought above Gravesend because it was thought that possibly a few good ones might be saved. The proportion of good ones subsequently picked out did not appear, but no less than 472 cases, each containing 1800 eggs, were landed at Limehouse and destroyed. It so happened that during this process an inquest was being held in the neighbourhood, and both the jury and coroner were disgusted, naturally enough, at the foul smell which had intruded into the coroner's court. So nauseating was the stench that several witnesses were taken ill with retching and vomiting. The Port Sanitary Authorities are much to be blamed in this matter for allowing the malodorous cargo to be landed at all, and, worse still, for countenancing the disposal of the eggs in this stupid and clumsy fashion, for it appears that the eggs were disposed of by first smashing them upon the pavement and then washing the resulting product down the drain with disinfectants. Somebody should have been compelled to pay the expenses of putting the ship out to sea again there to leave the loathsome cargo to the purifying and deodorising action of the ocean.

THE DANISH BUTTER INDUSTRY.

WE received recently a copy of an article in *brochure* form, entitled "A Land flowing with Milk and Butter: the Truth about Danish Dairying," &c. The article was written by Mr. D. Young, the editor of the *North British Agriculturalist* from which paper it was reprinted. It is a very grave attack upon the sanitary conditions of the Danish dairies. It purports to show an abnormal prevalence of tuberculosis amongst the cattle there owing to overcrowding and the neglect to ensure efficient drainage. "There can be no question, therefore," the article concludes, "that the extreme prevalence of this disease in Denmark is due primarily to the unsanitary conditions under which the animals are kept, and the ravages of this dire disease, which is communicable from animal to man, is (*sic*) not only one cause of the high death-rate of that country, but is also a serious source of loss to the dairy farmers in that 'land flowing with milk and butter.'" The importation from Denmark into this country of dairy produce is, as is well known, an important business, and if the state of things in Denmark has been correctly described by Mr. Young it is obvious that some steps should be taken to prevent the introduction of a probable source of insidious disease into this country by this means. The connexion between milk and tuberculosis has been well established, and we believe excellent progress is being made in this country towards providing efficient and sanitary accommodation for cows, in short, of placing them under the best possible surroundings which will eradicate the disease. Mr. Young's serious statements have not gone unchallenged. Indeed, they are categorically denied in a letter in the *Times* of Sept. 3rd by Mr. Harald Faber, Commissioner to the Danish Government. Mr. Faber quotes the following paragraph occurring in the final report of the Royal Commission on Agriculture: "It is clear from evidence before us that in some cases the buildings used for cows and the surroundings are in an unclean and insanitary condition, and that insufficient care is taken to keep the dairies perfectly clean. In the coöperative dairies in Denmark cleanliness is enforced by stringent regulations to ensure the supply of sweet, pure milk, and to prevent the spread of infectious disease by dairy products." We do not doubt, however, but that this portion of the subject has been fully inquired into by the Royal Commission on Tuberculosis, and, as their report is not yet issued, it is expedient, we think, in the interests of the public, that a preliminary announcement should be made by the Government to set a very serious indictment at rest.

THE LANDING-PLACE AT BRINDISI.

ACCORDING to a contemporary, certain proposals for altering the berthing-place of the Peninsular and Oriental Company's steamers at Brindisi are not likely to meet with general acceptance. The site chosen by the Public Works Department for a new landing quay is, it is said, doubly objectionable—firstly, as being so exposed to south-west winds as to make the manœuvring of these large vessels at times a matter of difficulty and danger, and, secondly, because at this point the town sewage, with a strange disregard to the public health, is carted into a shallow part of the harbour. The latter objection is obviously an important one in view of the fact that several hundreds of passengers would thus on each voyage be exposed to the danger of conspicuous insanitation. Another plan provides for an extension of the existing railway line and leaves the mooring station of the large steamers in its present situation. We are not informed as to the cost of these alternative proposals. It is estimated, however, that the yearly outlay in connexion with the Peninsular and Oriental Company's traffic in Brindisi is from £40,000 to £50,000, and that in the event of the first-mentioned suggestion being carried out this traffic is in danger of being transferred to Marseilles. The Italian Government, we understand, has not yet given its decision on the subject which evidently calls for reconsideration.

THE TREATMENT OF STRABISMUS.

IN the *New York Medical Journal* of July 24th, 1897, Dr. Prentice describes a new method of treating strabismus, which, however, he appears to have used only in cases of the internal strabismus which accompanies hypermetropia. His idea is to forcibly repress spasm of the ciliary muscles and the associated action of the internal recti by over-correction with strong plus lenses. In an ordinary case of internal strabismus, if a pair of plus 5 or 6 D be used, the strabismus will be seen at once to materially diminish. He also uses prisms to still further repress the action of the internal recti. The following case will make his method plain. A woman, aged twenty-five years, had convergence of about five millimetres. The vision of the left eye was normal, of the right $\frac{20}{30}$. After using atropine ·75 D of hypermetropia was found. Plus 5 D glasses were given for reading, and she was directed to hold the book at the farthest distance that she could read, and to read as long and as frequently as possible. For distant vision plus 2 D glasses were ordered, which gave but $\frac{20}{40}$ of vision. In two weeks there was sufficient relaxation of the internal recti to admit of fusion of objects at twelve inches through the plus 5 D glasses. Three days later 8° of prism with base in were added to the reading-glasses, and the fusion was still maintained. From this time as much prism was from time to time added as could be fused for, thus producing a constant effort of the internal recti to relax their spasm. At the end of two months 24° of prism combined with plus D 5

spherical were used for reading. Also she could fuse at 12 feet with the plus 2 D or distance glasses, which now gave vision $\frac{6}{6}$. In three months fusion was possible at all points with 4° of prism. A month later the patient could fuse for 8° of prism with the 2 D glasses, which now gave vision $\frac{6}{6}$ instead of $\frac{6}{18}$. Vision was now normal in both eyes with plus 1·50 D The writer concludes that this repression had further relaxed the ciliary muscle and revealed ·75 D more hypermetropia than the atropine had. In six months vision through the 2 D lenses was $\frac{6}{6}$, and their continuance was advised, with the occasional use of the sphero-prisms for reading.

A TERROR-STRICKEN PATIENT.

A SAD story was revealed a few days ago by a woman who applied to a magistrate for assistance in finding her daughter who had suddenly run away. It appears that the girl, who was sixteen and a half years old, had recently been attending a hospital for some illness, and from what was said she thought that an operation was necessary in order that she might regain her health. On leaving the hospital she was told to return again next the day, but instead of doing so she left her situation and disappeared. What the nature of the proposed operation was we do not know, but at any rate the thoughts of it so preyed upon the girl's mind that she ran away from all her friends, and in a letter to her mother she stated her determination to walk on until she found some place where she could die. It can only be hoped that she will soon be found, and that calm reasoning will allay her fears, or at any rate convince her that, whether the operation be necessary or not, the decision of having it done rests entirely with herself. It is easy to imagine that a young girl of neurotic temperament might work her mind into such a state that she would rather run away than face the dreaded ordeal, but fortunately the nerves of the majority are sufficiently strong to bear these unpleasant shocks. Children are especially apt to be easily frightened, and when they go to the hospitals they should always be accompanied by some grown-up person and not, as frequently happens, sent by themselves or in company with other children. By themselves they are often incapable of explaining their own symptoms and also of understanding any directions for treatment which it may be necessary to give them.

HOW DO CLIMATIC INFLUENCES PREVENT THE PROPAGATION OF PHTHISIS?

DR. GARDINER, of Colorado Springs, discusses this subject in the *Boston Medical and Surgical Journal* of July 22nd, 1897. He very reasonably insists that the impression that phthisis is not communicated in the arid or elevated regions of the world is not at all proved by the statistics generally brought forward. The immunising power apparently possessed by a climate may be really due to the manner of life, such as isolation and the like, day and night in the open air, or to the selection of lives, as the early settlers are necessarily strong. It is therefore only after a country has been settled for some time that indoor industries, overcrowding, and the general insanitary surroundings of civilisation exert their full action. Such conditions, however, now exist, as the dry and elevated regions of almost the entire world have populous cities, whose inhabitants lead indoor lives comparable to those of the dwellers in the crowded civilised centres from which our statistics have for years been drawn. The statistics of these cities clearly show that the prevailing opinion as to the influence of climate is well founded. For example, Denver has a population of 150,000, tall buildings which shut out the light, industrial occupations which are conducive to phthisis, and a large proportion of phthisical invalids scattered amongst its inhabitants. Yet only 64 deaths from non-imported phthisis occurred in 1896. The average city would show 450. Again, circular letters were sent to medical men practising in the dry belt which comprises Utah, Arizona, Wyoming, New Mexico, and Colorado, asking the number of cases seen or heard of by them and the number of years each had been in practice; 203 years of observation in practice gave only 130 cases of non-imported phthisis, fully 80 per cent. of which were from Salt Lake City, in native Mexicans in New Mexico, or in an altitude below 3000 ft. The writer attributes the climatic influence to the loss of virulence of the tubercle bacilli when distributed in the form of dust, from exposure to the constant sunshine in the rarified air, and also to the increased depth of respiration which high altitudes produce.

A NEW CORSET.

"MADGE," the editress of "Girls' Gossip" in *Truth*, who may always be depended on to take a sound view of the fashionable fads and fancies of the day, writes as follows in a recent issue of Mr. Labouchere's journal: "A new corset, devised by someone who has little sympathy for flesh and blood, is to transform the ordinary figure into one that measures 20 inches round the waist, 40 round the chest, and 48 or 50 round the hips. Please note this last item in the new development. In the illustration accompanying these particulars the hips rise in a semicircle at either side of the waist. It is a hideous distortion, and I should think it must be some sort of a joke, though letters from artists, physicians, society women, and fashionable dressmakers are printed on the subject. We shall see." The notion, it seems, hails from America, but we very much doubt its ever coming into vogue, either in the new world or in the old. A wasp-like waist is not a thing of beauty in the human species, to say nothing of its physiological inappropriateness. We quite agree with "Madge's" concluding remarks on the subject: "The proper measurements of a woman whose height is 5ft. 7in. are 26 inches round the waist, 34 round the chest, and 40 about the hips. Compare these figures with those I have given above!"

FORCIBLE REDUCTION OF POTT'S CURVATURE.

ONE of the most striking of the recent advances of surgery has been the introduction of the forcible method of reducing the deformity in Pott's curvature of the spine. Though attempts have been made from time to time to diminish the projection of the spinous processes of the affected vertebræ, yet the teaching recognised by practically all surgeons up to almost the present moment has been that no attempt should be made to reduce forcibly the curvature, and that all the surgeon's efforts should be directed to obtain consolidation and thus prevent the increase of the deformity. To Chipault, of Paris, and to Calot, of Berck-sur-Mer, must be accorded the credit of first having successfully employed forcible reduction. Since the publication of the results obtained by these surgeons numerous other papers on the subject have appeared. In many of the earlier cases it was thought necessary to resect the spinous processes of the vertebræ of the diseased area. A very interesting paper was read on this subject at the Moscow Congress by Professor T. Jonnesco, of Bucharest. He performs Calot's operation with certain modifications. In the first place, he never finds it necessary to remove any of the spines; and, secondly, he employs pulleys to obtain the extension. Manual traction is irregular and jerky, and is liable to be unnecessarily strong. The method employed is as follows. The patient, anæsthetised, is placed face downwards on two padded supports, one under the thorax and the other under the pelvis; a sling like that used in suspending a patient when a Sayre's jacket is put on is placed

beneath the chin and occiput, and a somewhat similar one is fastened round the pelvis, so that longitudinal traction can be made readily. The head sling is attached to the wall, and to the pelvic band is fastened a compound pulley, a dynamometer being interposed. Traction is then made until the dynamometer registers 45 or 50 kilogrammes. Two assistants then fix the pelvis and support the lumbar spine, while the operator presses firmly on the projection. A cracking sound is heard and the prominence disappears. Then a plaster-of-Paris jacket is put on, surrounding the whole trunk and fixing the head. The cases operated on were thirteen in number, and the ages varied from two and a half years to twenty-two years. In most case excellent results were obtained. Three deaths occurred—one patient died under chloroform, another died a week later from broncho-pneumonia, and the third died two days after the operation, but as no post-mortem examination was made no cause could be assigned for the death. As might be expected, recent and slight cases are considered the most suitable for operation, but even severe and long-standing curvatures have been treated with success.

SUPPER-BEER IN SCHOOLS.

WE have received, as might be expected, several communications on the important, if unsavoury, subject brought to the notice of our readers last week by the former headmaster of Foyle College, Londonderry. Among these came a temperance leaflet on the impropriety of certain uses of alcohol in schools, written by Dr. Clement Dukes, physician to Rugby school, the teaching of which is so sensible and simple that we desire to recapitulate it. After announcing, *in limine*, that in his opinion no alcohol whatever should at any time be given to the young of either sex save as a remedy in disease, Dr. Dukes made more particular remarks with regard to the domestic management of our big public schools in condemnation of "the cruel and pernicious practice which prevails at most of them of supplying supper at 9 P.M. consisting of various stimulating articles of food, from meat and tarts to cheese and beer." We are not aware how far it is the case that supper of such a character is placed before the boys at most of our public schools—possibly Dr. Dukes's words were spoken when such heavy and ignorant feeding of small boys was more usual both at home and at school—but we are prepared to endorse to the full his views on the mischief that such food might well work if given to growing lads just before the night's rest. Boys do not require the hypnotic influences of beer—most of them find Thucydides or conic sections, Nepos or Xenophon, football or rackets, to fulfil all their soporific needs—while the stimulus given by beer to the animal passions is most dangerous at a late hour in the evening, when no exercise of mind or body will follow to counterbalance the excitation. It cannot be too widely known that to give boys, as a rule, suppers of an indigestible or stimulating character immediately before sending them to bed is to do them a cruel wrong. It is to double their difficulty and to deprive them of their safeguard, and although the facts hold good in home life as much as in school life, it is, of course, at school that the consequences are most apparent and most disastrous.

CATHETERISM OF THE URETERS IN THE MALE.

IN the *Journal of Cutaneous and Genito-Urinary Diseases*, June, 1897, is published an account of this important innovation, which Dr. Meyer brought before the New York Academy of Medicine. It constitutes an extension to the male of methods devised by Dr. Howard Kelly in the case of the female. The following is the mode of procedure. The bladder is washed out and cocainised and from five to seven ounces of clear fluid are introduced. The ureter cystoscope containing the ureter catheter is then passed. After the interior of the bladder has been inspected and the ureteral openings have come into view one of them is approached and the catheter is pushed forward. The catheter is not allowed to pass more than two inches into the ureter, and the wire mandrel is withdrawn. As a rule the urine will begin to flow drop by drop. The writer avers that if his directions are properly followed there ought to be no difficulty in skilled hands performing the operation. In only one case did he fail, and here there was evidently congenital contraction of the mouth of the ureter. In the discussion which followed there was a consensus of opinion that the operation was by no means so easy as Dr. Meyer considered. Also it was pointed out that the introduction of the catheter might produce sympathetic anuria in the only working kidney. The value of the operation, especially in cases where nephrectomy is proposed, is obvious.

LEPROSY IN GREAT BRITAIN AND IRELAND.

WE are asked to announce that the authorities of the forthcoming International Leprosy Conference are anxious to obtain particulars of any cases of true leprosy which have come under medical observation during the last ten years or so in Great Britain and Ireland. Members of the profession who may have knowledge of such cases will confer a great favour and will materially assist the inquiry by communicating with Dr. Phineas S. Abraham, 2, Henrietta-street, Cavendish-square, who is secretary to the Leprosy Investigation Committee (National Leprosy Fund). What is asked for is information in the form of a short note giving initials of patient, sex, age, nationality, variety of the disease, length of time affected, in what country acquired, &c. Any facts, negative or positive, which may be supplied will be duly acknowledged at the conference.

THE RISING OF THE BORDER TRIBES.

THE latest news from India is much more satisfactory. There is a lull on the frontier at present. The main elements of a satisfactory kind in the recent intelligence are that the Afridis are beginning to count the probable cost of their action, to be less attentive to the preachings of the Mullahs, and to feel the loss of their subsidies and trade with India, as well as to be alarmed at the prospect of punitive expeditions against them; that the Mohmands are not disposed to rise; and that the Ameer of Afghanistan has not only spoken out, but taken some effective steps to punish those of his subjects disposed to join in the outbreak against British authority. It is the grave financial loss in which the Indian Government will be involved in suppressing a general revolt of the border tribes rather than any actual danger to our Indian rule—for that is comparatively small—that is so embarrassing at the present time. The policy seems to be to deal as promptly as practicable with those of the tribes who have already taken part in the revolt, and once having shown our power and determination to deal with them and compel their submission, to be ready to act in a friendly way to them when it has been obtained. Several punitive expeditions will soon be ready to start on their work, but we may be sure that the Government of India will only be too ready to bring things to as speedy an end as possible. The lesson that is required is the manifestation of our power to deal out rewards as well as punishments. There will be much temporary sickness, no doubt, but the news is not, so far, unfavourable in this respect. The adequate supply of animal transport has always been a difficulty in our military expeditions. We have no doubt that the field medical service system will prove to be good, but it will, we fear, be hampered by the fact that the medical departments of India are shorthanded at the present

time. The feeding and clothing of the expeditions will be a source of some difficulty; the insufficient supplies of clothing for the native followers and the soldiers of the native army engaged in frontier warfare are a fruitful source of inefficiency and of sickness, especially of a pulmonary kind. The natives of the plains of India, as might be expected, stand cold and exposure very badly, and, especially those who have previously suffered from malaria, frequently die from pneumonia.

LARYNGEAL PERICHONDRITIS AS A COMPLICATION OF TYPHOID FEVER.

LARYNGEAL perichondritis is one of the rarer complications of typhoid fever. In the *Journal of the American Medical Association* Dr. M. H. Fussell records the following case. A man, aged thirty years, had an unusually severe attack of typhoid fever. From the beginning there was much hoarseness. In five weeks the temperature fell to normal. Six days afterwards he ate an apple. Almost immediately he was seized with a severe attack of coughing and the signs of laryngeal stenosis. On the third day after this he was suffering extremely from the stenosis of the larynx and begged for relief. Examination of the larynx showed œdema and no ulcerations. Externally the region of the thyroid cartilage was swollen and extremely tender. Tracheotomy was refused. Two days later the œdema of the larynx had largely disappeared, but the stenosis was as great as before. The laryngoscope showed a pale mucous membrane and a decided narrowing below the cords. The patient died on the seventh day. The usual signs of typhoid fever were found at the necropsy. The interior of the larynx was filled with frothy muco-purulent matter. There was no ulceration of the cords. Section through the posterior angle of the thyroid cartilage, which was necrosed, showed a large perichondrial abscess.

PHARMACY AND THE SALE OF POISONS IN THE ISLAND OF JERSEY.

THE dangers attending the indiscriminate sale of poisons have only recently been recognised by the Legislatures of the Channel Islands, but it is satisfactory to find that two of them have at length made adequate provision for the safety of the public. As is well known, these islands legislate for themselves through the "States," which are the local parliaments, and are quite separate for each island. Guernsey passed a Pharmacy Act in 1882, but in the neighbouring island of Jersey there was no Pharmacy Act and no control whatever over the sale of poisons until Aug. 5th, 1897, on which date the State passed a Bill on the subject, introduced in February, 1896, by Dr. W. Duret Aubin, Deputy in the States for St. Heliers. The Act, or Règlement as it is called, will be in force for three years; it is in the French language, and consists of seventeen articles. It prohibits the practice of pharmacy in Jersey except by permission of the Royal Court, and provides that in future this permission shall be granted only to those who are duly recognised either (1) as "pharmaceutical chemists" or "chemists and druggists" by the Pharmaceutical Society of Great Britain; or (2) as "pharmaceutical chemists" or "chemists and druggists" by the Pharmaceutical Society of Ireland; or (3) as "Pharmacien de Première Classe" or "Pharmacien de Seconde Classe" by one of the Schools of Pharmacy of the University of France. The poison schedule, Parts I. and II., as well as the regulations with regard to the recording of the sale, are practically identical with those which are in force in England, with, however, the important addition that carbolic acid is included in Part II. Carbolic acid is so frequently intentionally swallowed as a means of suicide, and so many accidental poisonings have occurred in connexion with its use as a domestic disinfectant, that we are glad to find that the States of Jersey have set the example of prohibiting its indiscriminate sale, the urgent need of legislation on the subject being apparent from the fact that the Registrar-General's returns for 1895 show that in England and Wales during that year 580 persons committed suicide by poison, of whom 224 resorted to carbolic acid. The Jersey Act makes no reference to the addition of soot or indigo to arsenic, an admixture which is authorised in England.

INQUEST ON A CENTENARIAN.

To hold an inquest on a centenarian is as novel as it is rare, but with the law as it stands the inquiry into the death of Mrs. Mary Neighbour, at Ashurst Wood, Forest Row, Sussex, on Sept. 7th, was a matter of compulsion, the direct cause of death being the result of a fall. The old lady, who was but three months short of her 101st birthday, resided in a humble cottage with a grand-daughter. After taking her tea on Aug. 30th, in the temporary absence of the grand-daughter, the old lady got up from her chair. No one saw what happened, but from the fact that the chair recently occupied by the grand-daughter had been thrown over it was thought that she rested her body with her hand on the chair, which, not being evenly balanced, fell over, throwing the centenarian violently to the ground, her head striking the fender. A sudden and unexpected shock of this kind was quite sufficient to bring about her end somewhat sooner than would otherwise have been the case, for, as was only naturally anticipated, medical evidence showed that deceased was suffering from marked senile decay. She was unconscious when picked up from the floor, and she remained in this condition till the following Sunday afternoon. Her children (four by her first husband and seven by her second) and their descendents number 303, of whom some 200 are still living.

THE INFANT LIFE PROTECTION ACT.

THE amended Infant Life Protection Act, which is to become operative on Jan. 1st, 1898, may be accorded a qualified welcome as providing for the more practical application of a measure which has hitherto stood much in need of improvement in this respect. In the new Act considerable care has been taken to ensure the notification and periodic inspection of nurse children, the respectability of their nurses, and the sanitary condition of their surroundings. Excellent as these provisions are, however, their value is materially diminished by defects in the Act which must very seriously limit its utility. One of these consists in the exclusion of single nurse children from the Act, the other in the exemption of children for whose maintenance a sum exceeding £20 has been paid. The effect of these omissions is obvious. They virtually describe the Act as intended merely to suppress the unregistered crêche, while it leaves untouched the system of putting out to nurse which is at the root of much infant mortality. The unregistered crêche if broken up into its constituent units may still continue to flourish unobserved by the eye of authority. The nursed offspring of a wealthy parent may, under any conditions, escape supervision. The probable effect of these important omissions is obvious. Nurse children, it is well known, are usually illegitimate. They are, as a rule, not desired by their parents. If they should be committed to the keeping of unscrupulous persons one by one, or with a substantial payment, the law is no longer responsible for their safety which must therefore be at best an unknown quantity. We yield to none in appreciation of every honest endeavour to promote the welfare of children. For this reason we willingly acknowledge such advantages as

the amended Act confers on them. For this reason also we must admit a keen sense of disappointment that the omissions we have referred to have so greatly stultified its intention as to make it practically unreliable for the protection of infant life.

THE NEW INFIRMARY AT NEWCASTLE: A MAGNIFICENT PIECE OF MUNIFICENCE.

SOME two or three months ago we chronicled the interesting fact that Mr. Riley Lord, J.P., had been able to raise £100,000 for the re-building of the Royal Infirmary at Newcastle, of which ancient city he is an ex-mayor. The energy and perseverence that were displayed by Mr. Lord in raising this very large sum—probably the greatest effort in commemoration of the Diamond Jubilee that was accomplished outside the metropolis—have now been emulated by the magnificent generosity of another Newcastle citizen, Mr. John Hall, who has given out of his private purse a similar sum for the same purpose. With £200,000 to spend the city of Newcastle ought soon to have a magnificent infirmary, and as only reasonable conditions are attached to Mr. Hall's splendid donation, which was formally accepted by the Governors of the charity last week, we may expect soon to hear that a site has been selected and a plan approved of. The competing architects have been told of the altered conditions under which their designs may now be constructed, and the time for submitting the plans to the building committee has been extended.

SIMPLE MYOSITIS AS AN OCCUPATION DISEASE.

IN the *International Medical Magazine* of Philadelphia, July, 1897, Dr. Harold N. Moyer publishes the following exceptional case. A wood carver, aged forty-one years, in excellent health, noticed a painful condition on the outer side of the right elbow-joint. It gradually became worse, and soon a swelling was observed, but there was no redness of the skin. A few days' rest would reduce the swelling, but a return to his occupation produced recurrence. He had always been free from rheumatism. He came under observation nine months after the onset of the disease. Examination showed swelling of the muscles, extending downwards from the external condyle of the humerus about two and a half inches. The enlargement was confined to the muscles which arise from the condyle, and especially involved the supinator longus, the extensor carpi radialis longior, and brevior. The muscular bellies were firm and painful on deep pressure. The overlying skin was normal and there was no œdema. Sensation was perfect and no tender points could be found along the nerves. The electrical reactions were normal. There was neither spasm nor incoördination of movement when the patient followed his employment, it was only pain that compelled him to desist. The use of the arm in other occupations did not aggravate the condition. The patient illustrated the usual movements of wood-carving, which showed that the affected muscles were predominantly used, thus conclusively proving that the malady was an occupation disease.

INFECTION AND PARENTAL RESPONSIBILITY.

THE dangers connected with infectious disease have never been so clearly explained or so widely published as in our own day, consequently it is inevitable that the neglect of due precaution in respect of them should be legally punishable. In view of these facts two sentences in the Croydon county court imposing a light fine in each case upon defaulting parents cannot be considered even moderately severe. We mention them here because the offence committed is far from being uncommon, though it probably still escapes notice in a majority of instances. Sometimes it is, no doubt, a result of ignorance, but just as often, if not oftener, it is due to carelessness. How can we explain otherwise the frequency with which an infectious fever is caught at school? At the present date we commonly find that scarlet fever, or measles, if of a mild type, is treated as a mere common-place on the authority of some grandmotherly custom. No medical man is summoned, no sanitary precaution used, no notification, where this is called for, is made. In the case of whooping-cough, a disease of very grave import to young children, though not included in the schedule of the Act, this heedlessness is of daily occurrence. Such facts show clearly that, in spite of an increased knowledge of the power of contagion, many parents have still the most elementary sense of their responsibility with regard to it. It is therefore the more necessary that medical men and sanitary officers should do all that in them lies to instil a proper sense of the duty of precaution into the public mind. No alarmist attitude is required but is rather to be deprecated. The necessity, however, of isolation even in doubtful cases and at doubtful stages of disease, must be kept in view and instilled by precept and example.

THE treasurer of Guy's Hospital has received a donation of £1000 from the committee of the American Victoria Jubilee Fund to endow in perpetuity a "Queen Victoria Bed."

DR. R. R. RENTOUL, one of the recently elected Direct Representatives of the profession on the General Medical Council, has resigned his seat on that body.

DR. BYROM BRAMWELL has been elected an honorary member of the Société des Médecins Russes de St. Pétersbourg.

NOTE UPON THE TOXIC EFFECTS OF THE SWEAT OF A HEALTHY MAN.[1]

BY S. ARLOING.

II[2]

[WE published last week the first of two papers recently contributed by M. Arloing to the *Comptes Rendus* on the toxicity of normal human sweat, and to-day we give the second in the form of an unabridged translation. The following comment contributed by M. Berthollet on the earlier occasion upon which the subject was brought before the Academy of Sciences is of highly curious interest in this connexion. It will be seen from our correspondence columns that it has obtained currency in some of the continental journals in a slightly inaccurate form. M. Berthollet remembered having read the following in a work entitled "Mappæ Clavicula"—collection of ancient recipes (recipe 265): "Sudorem equi, quem in dextera parte inter coxas habuerit, sume, et intinge sagittam. Hoc expertum est utiliter." He suggests that it might be interesting to study the relation of this old prescription with M. Arloing's experiments.]

In a note inserted in the *Comptes Rendus* of July 26th last I briefly indicated the sum total of the characteristic features of poisoning by sweat, and gave in same details the evil effects produced on the circulation. I now propose to set out in the same manner the toxic symptoms produced on some other functions, still taking the dog as the type.

a. The mechanical phenomena of respiration are modified in number, amplitude, and form. I have already remarked in the preceding note upon the profound disturbance

[1] Translated from Comptes Rendus, vol. CXXV., No. 5, Aug. 2nd, 1897, p. 183.

[2] No. I. was published in THE LANCET of Sept. 4th, 1897.

occasioned to the respiration shortly after the introduction of the first dose of sweat into the blood. This disturbance, indicative of a violent excitement, is modified as a result of subsequent injections, and consists then in a considerable prolongation of the expiratory phase. Little by little, in proportion as the animal passes into a sort of hypnotic state, the respiratory movements diminish in number, become increasingly deep, and give rise to marked variations of arterial pressure. Furthermore, the inspiration is often accomplished by two well-defined efforts. Eventually the pneumographic curves are broken by slight irregularities occasioned by shiverings or tremblings, which shake the body of the subject at this stage. Finally may be noticed the modifications which precede and accompany the vomitings which are usual at this stage of the poisoning process. If, proceeding as I did in the study of the disturbances affecting the circulation, the respiratory movements are registered eight or ten hours after the last injection, during the stage of prostration, it is observed that the respiration has recovered its initial frequency, but is not so deep; that the inspiration is harsh and convulsive; that the thorax contracts rapidly at first, afterwards so gradually that it would be easy to believe that a long pause occurred during expiration. In one experiment, which may be regarded as an average case, there were 21 respirations a minute before the injections, 9 after the injections during the hypnotic stage, and 20 during the stage of prostration. In brief, the respiratory movements show, but rather by their form than by their number, that the nervous centres are affected by the sudoral poisons.

b. The mean temperature commonly falls in the course of the intravenous injections, but it is rapidly recovered, and after about four hours it rises above the normal by from one and a half to two degrees. It is not necessary for the production of a rise of temperature to administer a lethal dose; it may be observed in almost the same measure after the injection of a feeble or moderate dose. It coincides with general shivering attacks, lasts for about two hours, undergoes thereafter a sharp reduction of from a half to one degree, and oscillates for a considerable time about this febrile temperature. Then one of two things will occur; either the subject recovers, and in that case the temperature returns by degrees to the normal during the following days, or death may ensue, and in that case the temperature falls pretty quickly below the normal. It happens only very rarely that the subject dies, except there be a sub-normal temperature. When the dose is large or the sweat hypertoxic the temperature falls continuously after the injection without any further rise till death.

c. Over and above the effects upon the cardio-pulmonary nervous system I ought to mention the influence exerted by the injections upon the nausea-producing centre (*le centre nauséeux*) and upon the spinal marrow. It is impossible to deny that a relation of cause and effect may subsist between the sickness and the violent gastro-duodenal congestion occasioned by the sudoral poison; nevertheless, I can affirm that there is a direct action of this poison upon the nausea-producing centre, for I have observed vomiting to occur at the beginning of injections of concentrated extracts before the occurrence of any of the phenomena of congestion. The sweat secreted during and after muscular effort is more productive of vomiting than the secretion occasioned by artificial means after prolonged repose. The action upon the spinal marrow is manifested in many instances by excessive weakness of the hind limbs and of the lumbar region. There may be adduced, moreover, as evidence of an effect produced upon the nervous axis, the shiverings and tremblings which in the end involve almost all the muscles, shiverings and tremblings which are thrown into rhythmic action by the inspirations, and in some case choreiform movements of the limbs and spasmodic contractions of the diaphragm. Finally, as the sweat diffuses through the blood it produces an immediate exciting effect upon the muscular tissue of the intestine.

d. One of the most remarkable effects of poisoning by sweat is that produced upon the corpuscular constituents of the blood. This rapidly diminishes from the first day and takes a long time for renewal in case the poisoning does not result in death. Thus in two dogs, four hours after the injections, although the febrile reaction was at its maximum, the number of red corpuscles had diminished by about 1,000,000 per cubic millimetre. The following day the temperature had returned to normal, the number of red corpuscles had diminished in the one case from 5,940,000 to 3,732,000, and in the other from 5,100,000 to 3,280,000. A month later the subjects were still anæmic, although according to the report they were tending to return to the normal condition. The anæmic condition is accompanied by considerable emaciation; in three or four days the subjects lose more than one-third of their weight. If the malady lasts for a certain time sugar disappears from the blood and from the liver at the moment of death. At this moment also the urine is albuminous. The phenomena of nutrition and of the urinary secretion are therefore more or less profoundly affected by the presence of sweat in the blood. I have endeavoured to obtain evidence of this by an exact study of the excreta and of the chemical composition of the urine of animals submitted to a uniform course of feeding and one calculated to maintain a uniform condition of the organism. Immediately after the introduction of the poison the proportion of urea, of chlorides, and of phosphates in the urine is increased. Although the chlorides attain their maximum at the end of about four-and-twenty hours the urea and the phosphates do not attain theirs before forty-eight hours. Subsequently this proportion gradually falls. At the end of five days the phosphates continue to fall, but more gradually; the proportion of chlorides and of urea, on the contrary, tends to rise anew. But if account be taken of the quantity of urine secreted it will be found that the total amount of these substances eliminated during the five days following upon the injections is slightly below the normal. The greatest difference is presented by the chlorides, then by the urea, and least by the phosphates.

e. Now if we examine the symptoms of poisoning in the rabbit we shall find both analogies and differences. Of course, the vomitings do not occur, but the shiverings may be observed, the reduced temperature, the depression, the prostration, and sometimes the paresis of the hinder limbs. The first doses call forth violent contractions of the intestine, which produce movements of the walls of the abdomen in places. The pulse is much accelerated. The thoracic walls are agitated by rapid and jerky respirations. I have observed some constriction of the small vessels of the ear, but the pupil retains its mobility unimpaired. At last the animal falls into a lethargic condition, râles embarrass the respiration, the sensibility of the cornea diminishes, and a few convulsions precede death.

f. As for the guinea-pig, it becomes miserable, it shudders, its fur stands on end, it huddles itself together, its respiration becomes much accelerated, it utters faint cries from time to time, and finally it succumbs without exhibiting any more characteristic symptoms.

To sum up, if we take a survey of the symptoms described in this article and the preceding one we come to the conclusion that sweat contains some energetically poisonous substances, occasioning more or less derangement to all parts of the organism, disturbing the intimate phenomena of nutrition, modifying the composition of the blood, substances the properties of which possess a strong analogy to certain microbic toxins.

THE INCREASE OF DIPHTHERIA.

MR. D. T. BOSTEL'S letter (which we publish in another column) almost embraces the whole sanitary question—viz., (1) drain air as a means of propagating disease, (2) public sewers, (3) private drains, and (4) the duties of the local authorities. As the subject is at the moment one of very general interest a brief allusion to the points raised may be given.

First, with regard to insanitary surroundings causing or extending an epidemic of diphtheria. The specific infective poison of this disease differs from most others of an infectious nature in that the micro-organisms producing it are never found in the blood or in any of the internal organs. The bacilli in the human subject are only found in the mucous membrane of the throat.

It has been concluded that the action of the specific bacillus upon a weakened mucous membrane gives rise to a specific inflammatory process by the direct action of the poisonous products formed on the surrounding cells and blood-vessels, and produces the false membrane characteristic of the disease. These bacilli, though they may be present in the mouth, can exert little or no injurious effect

unless the mucous lining of the throat, larynx, &c., is already affected by some minor disease, but inflamed tonsils or ulcerations of the mucous membrane offer at once a favourable field for their operations.

There is a theory prevalent[1] that diphtheria is greatly influenced by damp, or rather by the level of the subsoil water, outbreaks of the disease so frequently occurring on the subsidence of water after a flood. This is, however, most likely due to the pollution of the sources of the drinking water by the flood from the surrounding cesspools, manure heaps, &c., by which means those who drink such water are prepared for the reception of the specific bacillus.

Dr. Klein believes cats to be a frequent source of transmission of infection. He is also of opinion that milk is another means of spreading the disease, though the question of its occasionally producing small pustules on the udder of the cow is still an open one. The wise will, however, see that their milk is boiled before use.

Dr. G. Sims Woodhead advises in any weak condition of the throat, not merely gargles, but application to the throat of antiseptic lotions, while plenty of fresh air and exercise should be taken combined with good food to promote the excretion of effete products, and that the cells may be able to play their part as phagocytes. He also states that the tenacity of life of these organisms at ordinary temperatures is very great—they retain their vitality for six months; and he advises that after a case has occurred the free use of boiling water is the best disinfectant, as a moist temperature of 136·4° F. will completely destroy them in a few minutes.

The very general distribution of the virus of diphtheria in an attenuated form makes it highly important that any unfavourable surroundings that tend to depress the vital powers, such as the emanations from a foul drain, which are especially liable to affect the throat, should be promptly corrected, otherwise a condition is established most favourable to the development of such bacteria, which then rapidly regain their virulence.

Secondly, the defective condition of many public sewers is much to be deplored. It is to be feared that there are few parishes in London in which some old and defective sewers do not exist. In some the brick bottoms have decayed and sunk, permitting large accumulations of deposit. Gases are generated in these to such an extent that the men who have occasion to wade through them dare not do so with a light for fear that their movements would free the gas in such volumes as might cause a fatal explosion.

The third point, relating to private drains. Houses in the neighbourhood of such sewers are liable to be affected by the emanations from them; these may travel along the course, not only of the house drains, but of the gas and water mains leading from the road.

Lastly, as to local authorities. The vestryman, with a view to future election, is often more desirous of spending public money upon improvements that command general attention than upon a buried sewer. The motto, "Let sleeping dogs lie," is one that frequently finds acceptance in connexion with drains and sewers.

The question on drain testing opens up rather a wide subject, but there can be no doubt that a drain that will hold water with a head of two or three feet must be a perfectly sound one. How long it will continue to be so if constructed of stoneware pipes is another matter.

SOME LITERATURE CONCERNING THE PLAGUE.

(*Concluded from p. 559.*)

THE report of the Commission sent by the Egyptian Government to Bombay to study plague is an excellent and interesting official document. In view of the rapid extension of plague in Bombay, and the possibility of infection of the Mecca pilgrimage by Indian pilgrims, the question very naturally arose of the danger of infection of Egypt, and it was consequently thought desirable that the sanitary authorities of that country should have the opportunity of studying the disease on the spot, as there had been no occurrence of epidemic plague in Egypt since 1845. A mission composed of the Director-General of the Sanitary Department (Dr. Rogers Pasha), the Director of the Hygienic Institute at Cairo (Dr. Bitter), and the Director of the Medical School, Cairo (Dr. Ibrahim Pasha Hassan), with a complete equipment for fitting out a bacteriological laboratory, accordingly started, and arrived in Bombay on Jan. 24th last. The report deals with the epidemiology and medical history, and with the clinical, pathological, and bacteriological aspects of the disease. It did not come within the scope of the mission to enter upon any criticism as to the measures adopted in Bombay for the control of the disease, or to express any opinion as to the practicability of applying measures to that end in a city like Bombay, where so many complex questions of race, caste, and religion arise. The mission found on arrival, a general infection of the city and an extension into the neighbouring country. There was no really efficient system of death-registration in Bombay, and if the official statistics of deaths attributable to plague be taken there was also a co-existing epidemic mortality from other diseases, as was pointed out at the time, and as is clearly shown by comparing the death-rate of the plague year with that of ordinary years, notwithstanding the large exodus which, owing to the fear of plague, took place from Bombay. We gather from the report that the conclusions arrived at were:—that the plague spread through human beings, and that the part played by rats, flies, &c., in the propagation of the disease was probably a very small one, and that, in the first instance, it was the individual, and not the locality, which was infected. It follows, of course, that the prompt isolation of the sick and infected and the evacuation of houses and rooms and their efficient disinfection are essential preventive measures. We need scarcely add that for any disease-cause to take root and flourish there must, as in the case of any seed, be a suitable state of soil and environing conditions, and unhappily these exist in abundance in most oriental cities and places, but the removal of them is difficult, and in any case means the outlay of money and time, as well as, commonly, interference with ignorant prejudices, social and religious customs, and habits. It is easy to understand that, owing to political considerations and questions of expediency, governments are very reluctant to take the necessary steps at the right moment in a matter when time, unfortunately, forms an essential element of success. The usual course is for the local government to neglect the advice of their duly constituted official advisers or to postpone giving effect to it until the mischief is done and the pressure of public opinion begins to be felt, and even then, as in the case of Bombay, extraneous advice is sought for in support of the necessary measures before action is taken. As Dr. Rogers points out, the progress of plague in the Bombay Presidency was relatively slow as compared with that of epidemic cholera, for example, and thus allows of much more time for the application of sanitary and precautionary measures for stamping out the disease, if only the cases can be detected, and for that an effective system of death-registration is obviously necessary. In this connexion we may call attention to the government resolution and papers published in the *Government Gazette* for the North-Western Provinces and Oudh relating to the outbreak of bubonic plague at Hardwár in April, May, and June last, and the measures adopted for its suppression. The outbreak presented some peculiar features, and was a very striking and interesting illustration of what can be accomplished by logical methods of sanitary procedures when wisely and judiciously carried out. The facts detailed in the official correspondence making up the medical and sanitary history of the occurrence are too long for us to set forth, but the sanitary commissioner, Surgeon-Major S. J. Thompson, D.P.H Camb., and all concerned showed considerable administrative ability and skill in the arrangements they made as did the executive and sanitary officers in carrying them out. They certainly merit the highly appreciative terms in which their services are spoken of in the government resolution. The general result was that the outbreak in the great centre of Hindu pilgrimage was fully met and the disease stamped out without prohibiting the holding of the various fairs and bathing festivals. No case of plague occurred among the myriads of pilgrims who visited Hardwár. Returning, however, from this digression to the subject of the report of the Egyptian Sanitary Commission we may say that the system of preventive inoculations is made the subject of critical comment and remarks. That immunisation of the

[1] See THE LANCET, August 28th, 1897, p. 563.

individual against plague may be arrived at is not only possible but probable; still, their efficacy in this respect has not yet been established. We do not ourselves see why practical sanitary measures should not go on while this method is being tried, but if it should be the case, as suggested, that recourse to such inoculations is likely to lead to the neglect of sanitary precautions of proved efficacy, then there is much force in what is urged in the report under review. It seems to us that the objections which might be urged against the practice are that the efficacy of such preventive inoculations has not yet been demonstrated; that they are painful, and attended with some fever; and that we do not know how long the alleged immunity lasts, and it appears impracticable to carry them out on so extensive a scale as is required for the protection of a population. In our present state of knowledge the recognised methods of dealing with epidemic diseases are the safest and best—viz., to search out and isolate the sick and segregate the infected as soon as possible, and to do all in our power in the intervals of their appearance to remove obvious causes likely to prejudicially affect the public health—by providing pure water supplies, good air, and cleanliness of soil. "Plague," says Dr. Rogers, "is not, in my opinion, and Dr. Bitter shares my views, a disease likely to take very firm hold amongst pilgrims living under canvas and constantly on the move." He considers, too, that there should be no unreasoning panic as to the danger of propagation of plague by commerce. After briefly describing the general state of things and the means available in Egypt for combating epidemic disease the Director-General of the Sanitary Department says that, on the whole, he considers himself justified in stating that the danger to Egypt from plague should not be very great. We have so extended our remarks on this practical and able section of the report that little or no room has been left for the remaining sections, dealing with the more scientific and medical and clinical aspects of the disease by Dr. Bitter and others. It must suffice to say with regard to these that they seem to us to have been very carefully and well done and will well repay perusal and consideration. "The Experiences and Lessons of the Bombay Plague," by Thomas Blaney, is a reprint of some able papers that appeared in the *Times of India*, in which the life of the plague epidemic in the population is traced in an interesting and suggestive way through its three successive stages—viz., its invading or spreading stage, its maximum degree of epidemic extension, and its third or declining stage, with reference to the measures which are applicable to them. The subject is well worked out and lucidly set forth, with a practical aim in view.

SMALL-POX AND VACCINATION IN ZULULAND.

A CORRESPONDENT writes: "As the subject of vaccination is one of never-ending interest the following case may be instructive as well as interesting.

"In November of last year a supposed outbreak of small-pox was reported to me, as one of the district surgeons in Zululand, as having broken out in my district, and on going to investigate I found six cases of a mild type in a convalescent stage. The infection I traced to a native recently returned from Johannesburg. There were four Kaffir kraals, of several huts in each, on the top of a hill, in such a situation as to render them most easy of isolation. I at once vaccinated and re-vaccinated all unprotected inmates, and placed a police guard round the hill, cutting off all communication with the outer world. Owing to part of my lymph being rather old several cases missed and had to be done over again, unfortunately not in time to prevent them contracting the disease; all of them did take it, one, an aged woman, very severely, almost in the confluent form. Her only garment was a short petticoat reaching to her knees. She had the sole charge of an infant, about eighteen months old, whose mother was away. This infant would not leave her night or day, slept with her, and was carried about by her, either on her back, or under her arm, the child being quite naked, rubbing off the tops of the pustules and well rubbing the virus into its own skin. The child had been vaccinated in four places and had taken well. I do not suppose either woman or child was once washed during the whole period of illness, and yet the child escaped small-pox infection. Could there be any better test of the efficacy of vaccination? Also, there were no cases of small-pox among those successfully vaccinated, though they mixed freely with the infected, even sleeping in the same huts. After an interval of twenty-one days from the termination of the last case I supplied each inmate with a piece of carbolic soap and sent them to the nearest spruit (brook) to wash themselves, making them leave their clothing, which was inconsequential, behind; I had it all hung up in the huts during their absence, the entrances being closed and the huts fumigated with sulphur. I would have much preferred to burn both huts and clothing, but was not allowed to do so; however, there was no return of the disease."

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Bristol Urban District.—The population of Bristol was estimated during 1896 at 230,623, but if the proposals for the extension of the borough are carried into effect Bristol will be very considerably increased both in population and in area. In connexion with the subject of water analysis Dr. D. S. Davies reports that twenty-one samples of water from local wells were examined by the city analyst, and with one exception all were found to be polluted. The exception afforded an interesting example of the futility of relying on analysis alone, whether be it chemical or bacteriological. The difference in the analysis during periods of drought and during those of heavy rain was most marked, and afforded a good example of the necessity for gauging risks rather by the surroundings of a well than by the analysis of its waters. Dr. Davies refers in his report to the complaints of the smells arising from the River Avon, but there is really nothing to add to the remarks we recently made on the subject in our columns; in fact, those remarks were in large part founded upon a notice of the report now before us. The subject of public slaughter-houses has been under the consideration of the sanitary committee during the year, and Dr. Davies, in a special report, states that the abattoirs of Bradford pay 6 per cent., of Manchester 4 per cent., and of Birkenhead 5 per cent.; and it seems probable that Bristol will soon be provided with these excellent preventatives of the sale of unwholesome meat, and, we may add, of unnecessary cruelty. The corrected death-rate of Bristol during 1896 was 17·59 per 1000, and the infantile mortality 135·9 per 1000 births. Concerning vaccination Dr. Davies reports that during 1895, the latest available returns, 73·06 of the children born were vaccinated. We wonder in all these cases how many insertions of lymph were made. In considering the bacteriological examination of diphtheria Dr. Davies states that in 1896 the test proved unreliable in 12 per cent. of the cases examined, and he points out that this failure may be due to errors in manipulation, in observation, or through the media being improperly prepared. Of errors in manipulation an instance is given where the wrong side of the cotton swab was applied to the surface of the agar. As Dr. Davies points out, a single negative result must be accepted with extreme caution. Thirty-six cases of small-pox occurred in Bristol during 1896, several of them being traced directly to Gloucester. In reference to the epidemic of small-pox at this latter place Dr. Davies observes that in an epidemic of equal severity in Bristol—assuming that the state of vaccination was similar to that which obtained in Gloucester—there would have been some 2196 deaths of small-pox in the city of Bristol during less than seven months.

St. Olave's District.—Dr. W. A. Bond states in his annual report for this district that he received information of the treatment of 14 cases of anthrax at Guy's Hospital; all the cases were operated upon and recovered. Of the 14 patients 6 worked at wharves in St. Olave's, 6 in the tanyard at Bermondsey, and the remaining two had a relative who worked in the same tanyard. In all instances the patients who had become infected at the wharves had been manipulating goat skins from China within a few days of their

attacks. Dr. Bond is glad to be able to report that as regards means of prevention there is a decided tendency in the leather trade to adopt the "wet" instead of the "dry" cure, and that the "wet" cured hides are now considered superior to those "dry" cured. As Dr. Bond observes, great care should be taken at the centres of exportation to see that the hides of animals dead from anthrax are not mixed with those of healthy animals.

The City of London Sanitary District —The figures yielded by the quinquennial census of 1896 furnish some interesting comparisons as regards the City of London with those of the 1891 census, which we noticed fully in our review of the annual report of Dr. Sedgwick Saunders, in which they were dealt with. The 1896 census showed that on the night of March 29th, 1896, the population of the City was 31,711, as against a night population of 38,320 in 1891, or, in other words, there has been in the five years which have elapsed between the two census returns a decrease of 6609. The estimated population for 1896 was 32,843, and the difference between the estimated and the actual population shows, Dr. Saunders observes, the desirability of more frequent enumerations of the people. The general death-rate of the City during 1896 was 17·8 per 1000, as against a rate of 18·3 for 1895, but it has to be noted that in these rates no allowance has been made for age and sex distribution. There were 915 tons of unsound meat seized in the City markets during 1896, the largest quantities being seized in the months from June to September. In his report as public analyst Dr. Saunders gives the result of certain analyses he made of foreign dairy produce, and they are interesting as having a distinct bearing upon the purity of our imported food supply. Samples of New Zealand butter were examined and found to be quite genuine, as also were those of Swedish, Australian, and Danish origin. Dr. Saunders points out that he made these analyses at the wish of the sanitary committee, but that this work forms no part of his duty as public analyst for the City. He considers that the Somerset House authorities might with profit undertake the examination of foreign produce.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS

IN thirty-three of the largest English towns 6071 births and 4362 deaths were registered during the week ending Sept. 4th. The annual rate of mortality in these towns, which had declined in the three preceding weeks from 29·5 to 24·6 per 1000 further fell last week to 20·7. In London the rate was 17·0 per 1000, while it averaged 23·2 in the thirty-two provincial towns. The lowest death-rates in these towns were 10·4 in Swansea, 15·0 in Plymouth, 15·5 in Bristol, and 15·9 in Cardiff and in Huddersfield; the highest rates were 30·8 in Salford, 33·5 in Wolverhampton, 37·5 in Hull, and 44·4 in Preston. The 4362 deaths in these towns included 1272 which were referred to the principal zymotic diseases, against 2319 and 1783 in the two preceding weeks; of these, 1001 resulted from diarrhœa, 83 from measles, 62 from whooping-cough, 57 from diphtheria, 38 from "fever" (principally enteric), and 31 from scarlet fever. The lowest death-rates from these diseases were recorded in Swansea, Bristol, Plymouth, and Cardiff; and the highest rates in Salford, Wolverhampton, Hull, and Preston. The greatest mortality from measles occurred in Birmingham, Manchester, Oldham, Blackburn, and Preston; from scarlet fever in Salford; from whooping-cough in Plymouth and Wolverhampton; from "fever" in Sunderland and Burnley; and from diarrhœa in Blackburn, Leicester, Salford, Wolverhampton, Preston, and Hull. The 57 deaths from diphtheria included 35 in London, 5 in Liverpool, and 4 in Birmingham. No fatal case of small-pox was registered last week in any of the thirty-three large towns; and no cases of this disease were under treatment during last week in any of the Metropolitan Asylum Hospitals. The number of scarlet fever patients in the Metropolitan Asylum Hospitals and in the London Fever Hospital at the end of the week was 3528, against 3341, 3400, and 3448 on the three preceding Saturdays; 371 new cases were admitted during the week, against 347, 340, and 356 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 119 and 102 in the two preceding weeks, rose again last week to 116, but were 33 below the corrected average. The causes of 39, or 0·9 per cent., of the deaths in the thirty-three towns were not certified, either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Portsmouth, Bristol, Cardiff, Leicester, Nottingham, and in fourteen smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, Salford, and Bradford.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight principal Scotch towns, which had been 21·6 and 19·6 per 1000 in the two preceding weeks, further declined to 18·1 during the week ending Sept. 4th, and was 2·6 per 1000 below the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 6·8 in Perth and 15·1 in Edinburgh to 23·5 in Leith and 23·6 in Dundee. The 538 deaths in these towns included 84 which were referred to diarrhœa, 19 to whooping-cough, 10 to scarlet fever, 5 to measles, 4 to diphtheria, 4 to "fever" (principally enteric), and 1 to small-pox; in all, 127 deaths resulted from these principal zymotic diseases, against 187 and 137 in the two preceding weeks. These 127 deaths were equal to an annual rate of 4·3 per 1000, which was 1·7 below the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of diarrhœa, which had been 147 and 96 in the two preceding weeks, further declined last week to 84, and included 38 in Glasgow, 12 in Edinburgh, and 9 in Dundee. The deaths referred to whooping-cough, which had been 21 and 23 in the two preceding weeks, declined again to 19 last week, of which 13 occurred in Glasgow and 4 in Dundee. The 10 fatal cases of scarlet fever showed a further increase upon the numbers recorded in recent weeks, and included 4 in Edinburgh and 3 in Dundee. The deaths from diphtheria, which had been 4 and 1 in the two preceding weeks, rose again to 4 last week, of which 2 occurred in Paisley. The 4 fatal cases of "fever" corresponded with the number recorded in the preceding week, and included 2 in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 62 and 78 in the two preceding weeks, declined to 69 last week, but were 11 above the number in the corresponding period of last year. The causes of 38, or more than 7 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 24·3 and 23·0 per 1000 in the two preceding weeks, rose again to 23·1 during the week ending Sept. 4th. During the past nine weeks of the current quarter the death-rate in the city has averaged 23·5 per 1000, the rate during the same period being 20·9 in London and 18·0 in Edinburgh. The 155 deaths registered in Dublin during the week under notice showed a slight increase upon the number in the preceding week, and included 33 which were referred to the principal zymotic diseases, against 39 in each of the two preceding weeks; of these 25 resulted from diarrhœa, 4 from diphtheria, 3 from whooping-cough, 1 from scarlet fever, but not one from small pox, measles, or "fever." These 33 deaths were equal to an annual rate of 4·9 per 1000, the zymotic death-rate during the same period being 3·2 in London and 3·2 in Edinburgh. The fatal cases of diarrhœa, which had been 31 and 32 in the two preceding weeks, declined to 25 last week. The 4 deaths referred to diphtheria exceeded the number recorded in any week since the end of June, and the 3 fatal cases of whooping-cough also exceeded those registered in any recent week. The mortality from scarlet fever showed a further decline from that recorded in the two preceding weeks. The 155 deaths in Dublin last week included 46 of infants under one year of age and 33 of persons aged upwards of sixty years; the deaths of infants and of elderly persons exceeded those recorded in the preceding week. Eight inquest cases and 6 deaths from violence were registered; and 43, or more than a fourth, of the deaths occurred in public institutions. The causes of 13, or more than 8 per cent., of the deaths in the city last week were not certified.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS OF LONDON—AUGUST, 1897.

(Specially compiled for THE LANCET.)

Sanitary Areas.	Estimated population in the middle of 1897.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.											Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.†	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON...	4,463,169	1	1804	918	1	249	12	20	458	18	3481	10·2	1	108	61	137	109	—	37	—	2079	2532	7·4	8124	23·7	366
West Districts.																										
Paddington	126,161	—	24	27	—	2	—	2	7	—	62	6·4	—	—	2	7	3	—	—	—	52	64	6·6	192	19·8	345
Kensington	171,427	—	47	29	—	4	—	—	23	—	103	7·8	—	—	—	5	1	—	—	—	49	55	4·2	222	16·9	271
Hammersmith	105,959	—	29	18	—	1	—	2	9	—	59	7·3	—	—	—	1	1	—	—	—	66	68	8·4	218	26·8	405
Fulham	120,040	—	70	33	—	2	2	—	18	—	125	13·6	—	—	—	5	5	—	2	—	77	89	9·7	222	24·1	392
Chelsea	96,692	—	46	17	—	6	—	—	4	—	73	9·8	—	1	—	1	2	—	—	—	41	45	6·1	151	20·4	342
St. George Hanover-square	80,330	—	11	10	—	1	—	—	—	—	22	3·6	—	1	2	1	1	—	—	—	7	12	1·9	74	12·0	212
Westminster	53,027	—	19	11	—	2	—	—	6	—	38	9·3	—	—	3	3	—	—	—	—	19	25	6·1	91	22·4	264
St. James Westminster	22,576	—	19	5	—	—	—	—	1	—	25	14·4	—	—	—	1	—	—	—	—	3	4	2·3	30	17·3	237
North Districts.																										
Marylebone	140,808	—	37	17	—	7	—	—	19	—	80	7·4	—	—	1	11	7	—	1	—	44	64	5·9	244	22·6	252
Hampstead	77,275	—	11	3	—	—	—	—	3	—	17	2·9	—	—	2	1	1	—	—	—	13	17	2·9	74	12·5	278
St. Pancras	242,255	1	75	24	—	27	4	3	32	3	169	9·1	—	5	—	7	5	—	3	—	115	135	7·3	467	25·1	430
Islington	341,134	—	111	46	—	20	—	1	28	1	207	7·9	1	5	7	6	13	—	2	—	111	145	5·5	529	20·2	304
Stoke Newington	34,136	—	8	1	—	1	—	—	2	—	12	4·6	—	—	—	1	3	—	—	—	12	16	6·1	51	19·5	338
Hackney	216,698	—	121	54	—	19	—	—	28	—	220	13·2	—	13	2	9	4	—	4	—	105	137	8·2	388	23·9	410
Central Districts.																										
St. Giles	37,840	—	17	2	—	4	—	—	5	—	28	9·6	—	—	—	—	—	—	—	—	10	10	3·4	63	21·7	378
St. Martin-in-the-Fields	12,711	—	5	2	—	—	—	—	2	—	9	9·2	—	—	1	—	1	—	—	—	1	3	3·1	14	14·4	417
Strand	23,552	—	8	1	—	1	—	—	2	—	12	6·6	—	—	—	—	1	—	1	—	8	10	5·5	42	23·2	306
Holborn	30,493	—	13	18	—	3	—	—	3	—	37	15·8	—	—	—	4	4	—	1	—	18	27	11·5	70	29·9	519
Clerkenwell	66,162	—	30	35	—	12	—	—	9	—	86	16·9	—	3	1	1	2	—	1	—	30	38	7·5	120	25·6	339
St. Luke	41,279	—	27	17	—	4	—	—	5	—	53	16·7	—	5	1	2	—	—	1	—	21	30	9·5	99	31·3	257
City of London	30,228	—	9	4	—	—	—	—	3	—	16	6·9	—	—	1	—	—	—	—	—	—	1	0·4	52	22·4	158
East Districts.																										
Shoreditch	121,883	—	69	26	—	21	—	—	17	1	134	14·3	—	7	9	3	1	—	4	—	74	98	10·5	269	28·8	382
Bethnal Green	129,098	—	80	47	—	3	—	2	45	1	176	17·8	—	3	3	4	5	—	—	—	76	91	9·2	269	27·2	356
Whitechapel	79,724	—	50	18	—	3	—	2	8	—	81	13·2	—	6	3	4	—	—	—	—	22	35	5·7	166	27·1	277
St. George-in-the-East	47,917	—	15	12	—	2	—	1	7	—	37	10·1	—	1	1	—	—	—	—	—	20	22	6·0	111	30·2	365
Limehouse	58,508	—	43	11	—	6	—	—	5	—	65	14·5	—	3	—	—	1	—	—	—	21	25	5·6	158	35·2	460
Mile End Old Town	111,883	—	78	24	—	10	—	—	12	—	124	14·4	—	2	2	2	—	—	2	—	48	56	6·5	203	23·6	263
Poplar	169,811	—	66	43	—	15	1	1	14	1	141	10·8	—	2	1	3	5	—	—	—	92	103	7·9	370	28·4	399
South Districts.																										
St. Saviour Southwark	24,919	—	13	12	—	1	—	—	1	—	27	14·1	—	4	—	—	1	—	—	—	16	21	11·0	54	28·2	483
St. George Southwark	60,388	—	30	11	—	1	1	—	7	—	50	10·8	—	6	1	1	1	—	—	—	56	65	14·0	149	32·2	404
Newington	122,191	—	62	20	—	9	—	—	13	—	104	11·1	—	5	4	6	3	—	2	—	78	98	10·5	258	27·5	440
St. Olave Southwark	11,480	—	5	4	—	2	—	—	—	—	11	12·5	—	—	—	—	—	—	—	—	5	5	5·7	23	26·1	321
Bermondsey	85,629	—	35	14	—	1	—	—	7	—	57	8·7	—	3	1	2	5	—	1	—	60	72	11·0	175	26·6	406
Rotherhithe	40,643	—	22	6	—	1	—	—	7	—	36	11·5	—	1	1	2	—	—	—	—	30	34	10·9	84	26·9	574
Lambeth	300 048	—	87	55	—	13	3	1	34	8	201	8·7	—	5	2	12	9	—	3	—	150	181	7·9	583	25·3	353
Battersea	168,877	—	120	59	1	9	—	3	10	1	203	15·7	—	2	4	10	9	—	2	—	80	107	8·3	298	23·0	415
Wandsworth	195,612	—	91	22	—	7	1	—	18	—	139	9·3	—	2	1	3	4	—	2	—	88	100	6·7	308	20·5	386
Camberwell	257,575	—	90	80	—	7	—	1	25	—	203	10·3	—	16	1	12	6	—	1	—	128	174	8·8	462	23·4	369
Greenwich	178,367	—	44	53	—	14	—	1	12	—	124	9·1	—	2	1	5	4	—	3	—	108	123	9·0	370	27·0	452
Lewisham (excluding Penge)	86,152	—	16	8	—	3	—	—	6	—	33	5·0	—	5	—	—	—	—	1	—	37	43	6·5	141	21·3	395
Woolwich...	41,409	—	20	8	—	1	—	—	1	—	30	9·4	—	—	2	—	—	—	—	—	28	30	9·4	90	28·3	473
Lee	39,215	—	16	2	—	—	—	—	1	—	19	6·3	—	—	—	1	1	—	—	—	16	18	6·0	57	18·9	392
Plumstead	61,057	—	15	8	—	1	—	—	3	2	29	6·2	—	—	—	1	1	—	—	—	34	36	7·7	93	19·9	310
Port of London	—	—	—	1	—	3	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including 11 cases of membranous croup.

† Including deaths from membranous croup.

VITAL STATISTICS OF LONDON DURING AUGUST, 1897.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality during August in each of the forty-three sanitary areas of London. With regard to the notified cases of infectious disease in the metropolis last month, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to 10·2 per 1000 of the population, estimated at 4,463,169 persons in the middle of this year. In the three preceding months the rates had been 8·1, 8·7, and 11·2 per 1000 respectively. Among the various sanitary areas the rates were considerably below the average in Paddington, St. George Hanover-square, Hampstead, Stoke Newington, Lewisham, Lee, and Plumstead; while they showed the largest excess in St. James Westminster, Holborn, Clerkenwell, St. Luke, Bethnal Green, Limehouse, and Battersea. Only one case of small-pox was notified in London during August, against 10, 4, and 7 in the three preceding months; this case belonged to St. Pancras sanitary area. No small-pox patient was admitted into any of the Metropolitan Asylum Hospitals during August, and none remained under treatment at the end of the month. The prevalence of scarlet fever in London showed a decline from that recorded in the preceding month; this disease was proportionally most prevalent in St. James Westminster, St. Luke, Bethnal Green, Whitechapel, Limehouse, Mile End Old Town, and Battersea sanitary areas. The Metropolitan Asylum Hospitals contained 3390 scarlet fever patients at the end of August, against 2495, 2786, and 3064 at the end of the three preceding months; the weekly admissions averaged 346, against 258, 272, and 364 in the three preceding months. The prevalence of diphtheria in London showed a marked decline from that recorded in the preceding month; among the various sanitary areas this disease showed the highest proportional prevalence in Holborn, Clerkenwell, St. Luke, Bethnal Green, St. Saviour Southwark, and Battersea. There were 1006 diphtheria patients under treatment in the Metropolitan Asylum Hospitals at the end of August, against 783, 864, and 957 at the end of the three preceding months; the weekly admissions averaged 131, against 108, 125, and 139 in the three preceding months. The prevalence of enteric fever in London during the month under notice showed a marked further increase upon that recorded in recent months; this disease was proportionally most prevalent in St. Pancras, Hackney, St. Giles, Clerkenwell, Shoreditch, Limehouse, and St. Olave Southwark sanitary areas. Erysipelas showed the highest proportional prevalence in Fulham, Clerkenwell, Shoreditch, Bethnal Green, St. George-in-the-East, and Rotherhithe sanitary areas. The 20 cases of puerperal fever notified in London during August included 3 in St. Pancras, 3 in Battersea, and 2 each in Paddington, Hammersmith, Bethnal Green, and Whitechapel sanitary areas.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various sanitary areas of the metropolis, the deaths occurring in the institutions of London having been distributed among the various sanitary areas in which the patients had previously resided. During the four weeks ending Saturday, August 28th, the deaths of 8124 persons belonging to London were registered, equal to an annual rate of 23·7 per 1000, against 14·9, 13·9, and 18·3 in the three preceding months. The lowest death-rates during August in the various sanitary areas were 12·0 in St. George Hanover-square, 12·5 in Hampstead, 14·4 in St. Martin-in-the-Fields, 16·9 in Kensington, 17·3 in St. James Westminster, and 18·9 in Lee; the highest rates were 28·4 in Poplar, 28·8 in Shoreditch, 29·9 in Holborn, 30·2 in St. George-in-the-East, 31·3 in St. Luke, 32·2 in St. George Southwark, and 35·2 in Limehouse. During the four weeks of August 2532 deaths were referred to the principal zymotic diseases in London; of these, 2079 resulted from diarrhœa, 137 from diphtheria, 109 from whooping-cough, 108 from measles, 61 from scarlet fever, 37 from enteric fever, and 1 from small-pox. These 2532 deaths were equal to an annual rate of 7·4 per 1000, of which no less than 6·1 was due to summer diarrhœa. The lowest zymotic death-rates were recorded in St. George Hanover-square, St. James Westminster, Hampstead, St. Martin-in-the-Fields, and St. Giles; and the highest rates in Holborn, Shoreditch, St. Saviour Southwark, St. George Southwark, Newington, Bermondsey, and Rotherhithe sanitary areas. The single fatal case of small-pox belonged to Islington sanitary area. The 108 deaths referred to measles were 72 below the corrected average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in Clerkenwell, St. Luke, Whitechapel, St. Saviour Southwark, St. George Southwark, and Camberwell sanitary areas. The 61 fatal cases of scarlet fever were 28 below the corrected average number; among the various sanitary areas this disease showed the highest proportional fatality in Westminster, Shoreditch, and Woolwich. The 137 deaths from diphtheria were 21 below the corrected average number; the mortality from this disease was highest in Paddington, Marylebone, Holborn, Whitechapel, Newington, and Battersea sanitary areas. The 109 fatal cases of whooping-cough were 30 below the corrected average number; this disease was proportionally most fatal in Marylebone, Stoke Newington, Holborn, and Bermondsey sanitary areas. The 37 deaths referred to enteric fever were 8 below the corrected average number; the mortality from this disease showed no marked excess in any of the sanitary areas. The 2079 fatal cases of diarrhœa were considerably more than double the corrected average number; among the various sanitary areas this disease showed the highest proportional fatality in Fulham, Holborn, Shoreditch, St. Saviour Southwark, St. George Southwark, Bermondsey, Rotherhithe, Woolwich, and Plumstead. In conclusion, it may be noted that the mortality in London during August from these principal zymotic diseases was nearly double the corrected average, owing to the excessive fatality of summer diarrhœa.

Infant mortality in London, measured by the proportion of deaths under one year of age to registered births, was equal to 386 per 1000, and considerably exceeded the average, owing principally to the excessive fatality of diarrhœal diseases. Among the various sanitary areas the lowest rates of infant mortality were recorded in St. George Hanover-square, St. James Westminster, Marylebone, St. Luke, City of London, and Mile End Old Town; and the highest rates in Holborn, Limehouse, St. George Southwark, Rotherhithe, Greenwich, and Woolwich.

THE SERVICES.

ARMY MEDICAL STAFF.

Surgeon-Lieutenant-Colonel James Fitzgerald Brodie retires on retired pay.

INDIA AND THE INDIAN MEDICAL SERVICE.

The services of the following commissioned Medical Officers are replaced at the disposal of the Government of India, Home Department:—Surgeon-Captains Vaughan, Clarkson, Deare, Oldham, and C. R. Stevens. The services of Surgeon-Lieutenant Gwyther are replaced at the disposal of the Government of India in the Home Department. The services of the under-mentioned officers are replaced temporarily at the disposal of the Military Department:—Surgeon-Captain Dewes (Madras), Surgeon-Captain Kanta Prasad (Bengal), and Surgeon-Captain Williams (Bengal). The services of Brigade-Surgeon-Lieutenant-Colonel Little (Madras), Sanitary Commissioner, Hyderabad Assigned Districts, are placed temporarily at the disposal of the Foreign Department. To be Lieutenant:—Second Lieutenant Ivan Urmston Battye. To be Brigade-Surgeon-Lieutenant-Colonel:—Adam Scott Reid, vice Brigade-Surgeon-Lieutenant-Colonel C. J. W. Meadows, retired.

NAVAL MEDICAL SERVICE.

Deputy-Inspector-General of Hospitals and Fleets Belgrave Ninnis is placed on the Retired List, with permission to assume the rank of Inspector-General of Hospitals and Fleets.

VOLUNTEER CORPS.

Artillery: 7th Lancashire (the Manchester Artillery): Surgeon-Captain D. Macneilage resigns his commission. *Royal Engineers:* 1st Lancashire: Surgeon-Captain E. Williams to be Surgeon-Major. *Rifle:* 2nd Volunteer Battalion the Royal Warwickshire Regiment: Surgeon-Captain W. G. Creswell resigns his commission. Galloway: Surgeon-Lieutenant N. J. McKie resigns his commission. 2nd Volunteer Battalion the Welsh Regiment: David Llewelyn Davies, M.B., to be Surgeon-Lieutenant.

VOLUNTEER MEDICAL STAFF CORPS.

The Aberdeen Company: Surgeon-Lieutenant C. T. D. Urquhart to be Surgeon-Captain.

THE FIGHTING IN THE TOCHI VALLEY.

The official despatches, consisting of the General Order of the Military Department at Simla on the late field operations at Tochi, together with the military reports thereon from the officer commanding the Tochi Valley troops, having been received by the Secretary of State from the Government of India, have now been published in the *London Gazette* of the 7th instant. The force was a small one, forming the political officer's escort, and an attack was made on it by Madda Khels at Maizar on June 10th last. The circumstances under which this treacherous attack occurred are clearly set forth, and they show that it could not have been foreseen or guarded against, and was not in any way attributable to any negligence on the part of the troops, who were, under the circumstances, compelled to withdraw under exceptionally trying conditions. While we have to deplore the loss of a number of officers and men the despatches will be read with a glow of enthusiastic satisfaction at the great heroism and gallantry, coolness and discipline, displayed by the British officers, the native officers and troops, and all concerned. His Excellency, the Commander-in-Chief in India, submits that this record of a gallant deed of arms is second to none in the annals of the Indian army—a view in which the Governor-General in Council entirely concurs. The conduct of both officers and men on this trying occasion was, it is declared, worthy of the best traditions of the Punjab Frontier Force. No one reading the plain and graphic description of what took place can hesitate to admire the heroic and devoted conduct of the British and other officers in continuing at their posts and work in spite of their wounds. Surgeon-Captain Cassidy was one of the officers wounded on the occasion. Not only was the retreat most deliberately conducted, but the succour and care of the wounded were apparently admirably carried out under very difficult and dangerous conditions.

THE INDIAN RISING.

We have elsewhere alluded to the rising of the tribes on the Indian frontier. The punitive brigades are advancing, and the latest news indicates that the revolt of the tribes is collapsing rather than extending. A number of them are surrendering their arms, the Mullahs are losing their influence, and the news seems altogether more satisfactory than it was a week ago. The European force in India is being strengthened by troops and reinforcements from this country. The following officers of the Army Medical Staff have received orders to proceed to India for duty: Surgeon-Lieutenant-Colonel J. M. Beamish, Surgeon-Major J. S. Green, Surgeon-Major W. B. C. Deeble, Surgeon-Major W. Dugdale, and Surgeon-Captain D. Hennessy.

A NEW NAVAL ANNUAL.

Messrs. Witherby and Co. announce that they will issue in October next a new work entitled "The Royal Navy List Diary and Naval Handbook." The book will contain upwards of 500 pages, and, independently of the Diary portion, there will be a mass of matter touching upon all subjects of interest to naval men, and specially designed for the use of the service afloat and ashore. This should be a useful addition to the excellent "Royal Navy List" issued by the same publishers.

The Japanese are an up-to-date people, for we are informed, says the *Army and Navy Gazette*, that the Japanese Red Cross Society is going to build, at a cost of 1,000,000 yen, two vessels of 2600 tons each for the use of patients in time of war.

THE ROYAL PHOTOGRAPHIC SOCIETY.—We are informed that the forty-second annual exhibition of the Royal Photographic Society will be opened to the public at the Gallery of the Royal Society of Painters in Water Colours, 5A, Pall Mall East, on Monday, Sept. 27th. The exhibition will be open daily from 10 A.M. to 5 P.M., and on Monday, Wednesday, and Saturday evenings (when lantern slides will be shown) from 7 to 10 P.M. The exhibition will close on Nov. 13th. On Saturday, Sept. 25th, there will be a private view of the exhibits, followed in the evening by a conversazione, at which the President (the Earl of Crawford) and the Council will receive the Fellows, members, and their friends.

Correspondence.

"Audi alteram partem."

"TRACHEAL INJECTIONS."

To the Editors of THE LANCET.

SIRS,—With reference to Dr. Thompson's paper on the above subject, published in the *Journal of the American Medical Association*, and to a leading article in THE LANCET of Sept. 4th, may I be permitted to point out that most, if not all, of Dr. Thompson's arguments have been anticipated in my paper, published in the Transactions of the Royal Medical and Chirurgical Society, vol. lxxviii. (1894). Shortly after a *résumé* of this paper was published in THE LANCET[1] I received scores of letters from "America" asking for further particulars, &c. Yet it now comes back as a sort of novelty. There are two points, the one in Dr. Thompson's paper, the other in the leading article, to which I would like to refer.

Dr. Thompson says the vehicle used should be light petroleum oil or olive oil. May I quote myself on this point?

"Observation of this case first suggested to me that olive oil was *not* the best vehicle in which to convey the medicinal agent to the lung. A demonstration of this was easy. I collected some of the dense expectoration from the case in a tube, closed with a cork at one end, and poured some of the oily solution on to it; after twenty-four hours the oil still remained at the top, whilst the lower stratum (which could be smelt by removing the cork) did not appear to contain either menthol or guaiacol. [The case referred to was one of bronchiectasis.] It is all very well to demonstrate, as Schrwald and Reichert have done, that the injected material can be found all through the lung tissues after an injection. So could it be found in the bladder. A few minutes after an intra-tracheal injection of turpentine I have noticed the characteristic smell of violets in the urine. The simple tube experiment mentioned suggests that the finding of menthol in the bronchioles, &c., after the injection of an oily solution (not miscible with the bronchial secretions) is more probably due to a secondary effort at *excretion* (subsequent to absorption) so easily noticed in the kidneys; and this, although very probably beneficial, is, I take it, quite different from bringing the original strong solution into *direct contact* with the diseased parts."

As regards your doubt as to the absorption of the drugs by the lung tissue, I will make a simple statement and ask an answer. I inject into the *tracheæ* of patients each week over one quart of fluid. If it be not absorbed what becomes of it? I am, Sirs, yours faithfully,

Uppermill, Saddleworth, Sept. 8th, 1897. COLIN CAMPBELL.

THE INCREASE OF DIPHTHERIA.

To the Editors of THE LANCET.

SIRS,—I exceedingly regret to learn from THE LANCET of the still continued increase of this horrible disease, and have long thought it is due to the unsound condition of street sewers, the evil being increased on the "combined" systems. If I am right, then, there is no wonder at the steady increase, notwithstanding improved sanitary condition of houses generally. For some few years past it has been an acknowledged fact that the "chemical" and "smoke" tests are not always to be relied upon in detecting any leakage or unsoundness of drains under residences, and at the present moment I know of a vestry which refuses to use the only reliable test—viz., water—in such cases, even where the vestry has been assured of the unsoundness of a drain and the inmates suffering from the effect of the unsoundness. If authorities are so powerless with house-drains, then one cannot be surprised if the public sewers are in such a leaky and unsound condition generally.

I am, Sirs, yours faithfully,

London, Aug. 16th, 1897. D. T. BOSTEL.

"BATTEY'S OPERATION."

To the Editors of THE LANCET.

SIRS,—Dr. Kenneth Watson's letter in THE LANCET of Sept. 4th, 1897, introduces a subject which in these days of family limitation is frequently brought to the notice of the physician. A husband and wife desirous, for varying motives, of having no more children, and yet not wishing to lead single lives, agree to adopt some

[1] THE LANCET, Dec. 1st, 1894, p. 1279.

more or less harmful method of prevention. In spite of this conception occurs, and a medical man is consulted with a view to inducing abortion. The description given of the ill-health or sufferings of the patient during her last pregnancy and confinement is sure to be an exaggerated one, and the truth can only be estimated by tactful inquiries, which elicit an evident determination to have no more children—a resolve founded usually upon notions of economy. At such an interview one is lead to realise that if this same patient were endowed with a strong maternal instinct, and was keenly desirous of having a living child, the previous one having been stillborn, all these considerations would be made very light of. Unless there is a strong professional reason why another pregnancy or confinement should be prohibited the physician should listen to no social or domestic arguments, and should refuse to countenance any operation which would tend to prevent conception or to terminate an existing gestation.

In Dr. Kenneth Watson's case the first labour was tedious, and was terminated by forceps. It was accompanied by hæmorrhage and a severe perineal rupture. The second labour was unaided and very rapid, and the perineum was again partially ruptured. These conditions might, perhaps, in the opinion of some, be considered indications for inducing premature labour two or three weeks before full term, but would not, in my opinion, warrant a medical man advising either total sexual abstinence, the adoption of preventive methods, or any sterilising operation.

To advise a woman to have her healthy appendages removed for a moderate contraction of the bony pelvis or of the soft parts is never justifiable, for in these days of antiseptic midwifery a premature labour can be easily and safely induced at the appropriate date, and the child, if properly tended, in no way suffers. If the contraction be so marked that Cæsarean section has to be performed the patient may then easily be rendered sterile without extra risk, though even this is not essential. If an extreme degree of pelvic contraction exist, and is only discovered after conception, and it is evident that a viable child cannot be borne, and the risk of a Cæsarean section is dreaded, abortion should be induced; but I doubt whether it would ever be justifiable to castrate the woman even then—it would be a proceeding which would be so likely to be abused that it is to be hoped it will not be advocated. If ever such a course were indicated, apart from Cæsarean section, I should prefer the vaginal rather than the abdominal method. In these respects, I fancy, Dr. Watson's views do not materially differ from my own.

May I correct one statement which Dr. Watson seems to make? Removal of healthy ovaries is *not* "a recognised procedure in certain neuroses, such as hystero-epilepsy." This was Dr. Battey's original dictum, but oöphorectomy, for the treatment of neuroses, has now been discontinued owing to its almost uniform failure to cure.

I am, Sirs, yours faithfully,

Manchester-square, W., Sept. 6th 1897. AMAND ROUTH.

"THE EMPLOYMENT OF GLOVES IN SURGERY."

To the Editors of THE LANCET.

SIRS,—The note in your last issue on the use of gloves in surgery as recommended by Mikulicz and von Manteuffel causes me to beg space for a few observations. I have not in surgical work found evidence of any insuperable difficulty in rendering the hands sterile, but in septic surgical cases there is danger both to the operator and to his other patients. For such cases I now use the same kind of gloves that I have described and recommended in my small work on "Post Mortems." Since the publication of that work last year I have had from time to time inquiries as to exactly the kind of glove I recommend. At my request Messrs. Mayer and Meltzer, 71, Great Portland-street, have laid in a stock of the gloves so that medical men may be able to obtain them without delay. Of course different pairs of gloves must be used for post-mortem and for surgical work, and they should be kept in separate bags and distinct from the bag used for the apron, &c., worn in operating on aseptic cases. Before removing the gloves they should be washed with soap and rinsed first in water and then with carbolic lotion.

I am, Sirs, yours faithfully,

Old Cavendish-street, W. J. JACKSON CLARKE.

POLICE FEES AND THE MEDICAL PROFESSION: AN APPEAL TO THE LARGE TOWNS.

To the Editors of THE LANCET.

SIRS,—In consequence of the irregularity in the charges made by medical men the watch committees of several towns have laid down certain scales of fees which they undertake to pay for ordinary attendance when the assistance of the medical man is sought for by the police. In Newcastle-upon-Tyne the scale is 3*s.* for day and 5*s.* for night visits; in Plymouth 3*s.* 6*d.* and 7*s.* 6*d.*; in Bradford 7*s.* 6*d.* for both day and night; in Stockport 3*s.* 6*d.* and 5*s* 6*d.*; in Cardiff 3*s.* 6*d.* and 7*s.* 6*d.*; in Exeter 3*s.* 6*d.* and 7*s.*; in Liverpool 3*s.* 6*d.* between 7 A.M. and 11 P.M., and 7*s.* 6*d.* between 11 P.M. and 7 A.M.; whilst in London it is 3*s.* 6*d* for day and 7*s.* 6*d.* for night visits. In Portsmouth it has been recently fixed at 3*s.* 6*d.* from 8 A.M. to 10 P.M., and 7*s.* 6*d.* from 10 P.M. to 8 A.M.

It must be borne in mind that these fees were primarily made in many towns to govern payment to the police surgeons, who are called to every possible case. Having so many cases the remuneration was considered sufficient. In the case of general practitioners—who are only called in occasionally, and then only to cases of great urgency when there is no time to send for the regular police surgeon—the fees are totally inadequate. The medical profession in Portsmouth, through its Medical Union, has asked the Watch Committee for payment on the following scale:—

For a visit between 8 A.M. and 8 P.M. ...	Five shillings.
For a visit between 8 P.M. and midnight	Seven shillings and sixpence.
For a visit between midnight and 8 A.M.	Ten shillings.

The grounds upon which the Portsmouth Medical Union based its request were as follows:—1. Calls to police cases are always urgent and require immediate attention; consequently other work has to be suddenly suspended. 2. These cases are most frequently serious, and involve prolonged attendance, as the police do not apply for help in trivial cases or when there is time to send for the regular police surgeon. 3. Very particular attention has to be given to every possible detail of each case, in view of subsequent legal proceedings. This demands extra time in addition to the extra mental strain involved.

Notwithstanding these explanations the Corporation of Portsmouth have refused to accede to the tariff of the Medical Union. In considering this question it has to be borne in mind that these are not the fees of a public medical service, but only for occasional and urgent cases to which the police require our assistance. How many calls not made by the police to street accidents and sudden illness medical practitioners receive without ever getting the slightest remuneration only the medical profession is aware of? If these cases were paid for by the police where the fees were not obtained from the patient, the scale adopted by the various corporations would be acceptable to the medical profession. It cannot be said that 3*s.* 6*d.* is an adequate payment for a sudden call to a police case, although it might be for the less serious street cases to which every practitioner is now and then summoned.

It would seem as if the corporations in their illiberal treatment of professional men had taken advantage of the moral reprobation in public opinion which would follow refusal on the part of a medical man to attend when summoned by the police. Not only public opinion, but feelings of humanity, prompt us to render assistance whenever we are called, whether there be any prospect of remuneration or not; so that for a public body to pay us inadequately for our services under these circumstances is, to say the least, mean in the extreme. It is comparable to being stingy in remuneration to a lifeboat's crew after attendance at a shipwreck, although, if we do not always risk our lives, we might be otherwise, often much more profitably, employed. Portsmouth will have to fight its battle for itself, but I wish to ask the medical men in the towns above mentioned to rebel against the low scale of fees allowed them in these cases and individually, as well as collectively, to notify their watch committees that in future they will require payment on the higher scale. In the event of refusal there is the resort to the county court. Success here, however, much depends upon the sympathies of the presiding judge, and also as to whether the doctor's case is properly laid before him. It seems, at any rate probable, that if a medical man had notified the watch committee of his scale of fees and they were reasonable the committee would be compelled

to pay. Combination of the profession in each town ought to do a great deal in this matter, as evidence in support of a given case should be easily obtainable. Special cases requiring special services must, of course, be considered on their individual merits. It is sufficient for us now to adopt some uniform scale for ordinary visits. I therefore recommend the above scale of fees of the Portsmouth Medical Union as the most equitable that has been suggested, and would urge upon practitioners in every town to demand payment upon this scale.

I am, Sirs, yours faithfully,

T. FREDERICK PEARSE, M.D.,
Sept. 4th, 1897. Hon. Sec. Portsmouth Medical Union.

"IMMORALITY AMONG SCHOOL BOYS."

To the Editors of THE LANCET.

SIRS,—I have read with great care and interest Mr. Hime's article on the above subject, and whilst fully recognising that the vice to which he refers exists to a large extent, and that it is the duty of all concerned in the rearing of boys (not of head masters only, by the way) to do everything in their power to check it, I cannot for one moment agree with him as to the best means of preventing such habits. He divides these methods into two classes: (*a*) school arrangements; and (*b*) moral suasion. Of the latter of these I have not much to say, except that a few veiled remarks on the subject in the form of a lecture to a body of school boys do not strike me as likely to do much good. Much more to the point is the advice and warning given by him to each new boy on his arrival at school. It is with the school arrangements for preventing immorality that I have to quarrel, for, in brief, what do they amount to? Nothing more or less than a system of continual spying on the boys night and day, during playing and during working hours, without intermission; they are never allowed to be alone. This is a system calculated to bring out all that is underhanded, vicious, and deceitful in a boy, and to repress all that is above-board and honourable. This was not the plan of Dr. Arnold, the greatest of head masters; it approximates too closely to the French system of education to be agreeable to the majority of Englishmen. If, as Mr. Hime claims, "the companionship [during play hours] of a suitable master was always agreeable to the boys," then he must, indeed, have met with a curious collection of them; there is not one other like them in England. Boys, like everyone else, want to be free from restraint occasionally, and this is impossible with Mr. Hime's method of a master's bedroom opening out of each dormitory, with a master always superintending studies during school hours, and with a master always attached to the boys at play. Without going fully into the treatment of this habit I might call your attention to the old classical remedy—plenty of healthy exercise and not too much animal food—and suggest that these are the lines to go on to arrest the immorality of boys, not those of Mr. Hime.

I am, Sirs, yours faithfully,

L. A. PARRY, M.D., B.S. Lond., F.R.C.S. Eng.
Bartholomew-road, N.W., Sept. 6th, 1897.

THE HOSPITAL REFORM ASSOCIATION.

To the Editors of THE LANCET.

SIRS,—I have much pleasure in informing you that the Earl of Stamford has kindly consented to preside at our conference on Oct. 21st. This will prove a source of gratification to all who are interested in the subjects we propose to discuss, as it is well known that his lordship has devoted much time and attention to the administration of hospitals. My council would like to suggest that the subject of out-patient administration should be dealt with under the following heads: (1) from a consultant's point of view, (2) from a general practitioner's point of view, (3) from an administrative point of view, and (4) from a patient's point of view.

In order that an expression of opinion may be obtained from as many gentlemen as possible it has been decided to make a time limit for readers of papers and speakers, and fifteen minutes for the former and five minutes for the latter have been fixed. Priority will be given to those gentlemen who have announced beforehand their intention of speaking.

I am, Sirs, your obedient servant,

Cardiff, Sept. 7th, 1897. T. GARRETT HORDER, Hon. Sec.

HEALTH QUESTIONS AT THE ZURICH INTERNATIONAL CONGRESS FOR THE PROTECTION OF LABOUR.

(FROM A SPECIAL CORRESPONDENT.)

A REMARKABLE and, in one sense, an unprecedented Congress has been held at Zürich. THE LANCET, of course, is in no wise concerned with the political aspect of this Congress; but the desire manifested by the members to assimilate internationally laws framed so as to protect the health of the working community of all civilised countries involves many questions in which your readers take a deep sympathetic interest. Undoubtedly one of the most effective arguments against legal restrictions upon unwholesome industries, nightwork, and the hours of labour generally is the danger of foreign competition. On the other hand, if similar laws were simultaneously enacted by other countries this danger might be reduced to a minimum. Such was precisely the aim and purpose of the Congress in question. But it does not suffice to merely express a good sentiment or to make advantageous proposals. Ideal reforms are more readily conceived than realised. The practical point depends on the force of the organisations which adhere to these proposed measures. Therefore it is necessary to say a few words as to the political elements which composed the Congress, not for the sake of dealing with politics, but so as to show that the Congress constituted a demonstration of sufficient importance to have some influence on European governments—an influence which will tend towards the improvement of public health. In advocacy of such restrictions on the freedom of labour as may be necessary to preserve the health of the workers there have been innumerable congresses, both national and international, composed of medical men, of sanitary reformers, and of philanthropists. Nor have the workmen themselves been indifferent to their own interests. The annual congresses of the trades unions of Great Britain invariably adopt a number of resolutions demanding better legislation for the protection of the health of the workers. Resolutions to the same effect are likewise discussed and approved at the political gatherings, national or international, of the working class or labour parties. But when such congresses have been representative congresses—that is to say, when they were composed exclusively of delegates elected by organised bodies—they were purely party gatherings. The Zürich Congress, on the other hand, may be qualified as unprecedented because, though composed of the elected representatives of constituted associations, it was not a party congress, but, on the contrary, brought together men belonging to antagonistic parties, who up till now have waged bitter war against each other. There were 375 delegates, representing fifteen different nationalities; of these, 107 were elected by Roman Catholic working-men's associations, some of these being priests, who, like the Belgian Abbé Daens, have acquired a wide reputation for their advocacy of the poor and oppressed. The Evangelical or Protestant associations sent only a few representatives. The other delegates were either trade unionists or members of political socialist organisations. There were also a considerable number of members of the Belgian, Swiss, Italian, Austrian, and German Parliaments, belonging some to the Socialists and some to the Roman Catholic parties. The chair was occupied alternately by M. Sherrer, a leading Swiss social democrat, and by M. Decurtius, leader of the Roman Catholic party in the Swiss National Council or Federal Parliament. Throughout the greatest order was maintained; most of the resolutions were carried unanimously, and in dealing with the need of international legislation for the protection of labour these old and inveterate adversaries forgot their differences and worked throughout harmoniously and amicably, and this, too, in spite of the trying fact that the Congress sat during eight hours a day for an entire week. That such heterogeneous elements should thus have been brought together shows that the demands made are widely appoved and not confined to one single faction or party, but are supported by both orthodox and heterodox organisations existing in no less than fifteen different countries. Therefore, there can be no doubt but that the Congress will

exercise some influence on the legislatures of different countries. Consequently, it is of some importance to ascertain what was said and done with regard to the preservation of public health.

The first day was devoted to the question of Sunday rest. Professor Joseph Beck, Doctor of Divinity, of Fribourg, presented a report on this topic. In his opinion the fact that in England there is a lower death-rate than on the Continent was in a measure due to the better observance of the weekly rest. The Swiss law insists that railway servants should have fifty-two days' rest per annum, comprising every third Sunday, or seventeen Sundays in the year. He showed that when the French Revolution tried to establish the *décadi*, or every tenth day, as a holiday this was found insufficient, and after two years' time the weekly holiday had to be restored by the law of Aug. 2nd, 1799. But for the Sunday to be a real day of rest it was necessary that work should cease early on Saturday, so that all domestic work could be done on that day. The Congress was unanimous in demanding thirty-six consecutive hours of rest per week. But it was also unanimous in demanding that traffic should not be stopped, and that all which contributed to the intellectual development or the recreation of the people on Sundays should be sanctioned. The mind as well as the body required a holiday, and this could not be provided during a day of stagnation and dulness. The British delegation were loud in their protest against the dreariness of the English, and more especially the Scotch, Sunday, and maintained that the sole alternative of church or public-house did not constitute a healthy holiday either for the mind or the body. This view was fully endorsed by the Continental delegates. At the same time, the resolution carried made full provision assuring that those who, to meet these views, had to work on Sundays should have a rest of equal duration during another part of the week.

The second day was occupied in the consideration of a report presented by Dr. F. Gehrig, of Berne, on the work of children and young persons. He pertinently inquired why Governments thought young men were not fit for military service till they reached the age of twenty years, and yet allowed them to do what was often equally hard work in factories or mines when they were much younger. Dealing with the medical aspect of the case, he insisted more especially on the derangements produced in the nervous system, and, as a consequence, on the organs of digestion and nutrition. The "pyschosis of overwork" was to be noted among young and too ardent students, but it was more marked among youths who were overstrained by physical work. Among young persons who had to stand for many hours varicose veins, hæmorrhoids, and ulcers were of frequent occurrence. The carrying of heavy weights dilated the heart and produced the well-known X or "factory legs." Flat-feet and hernias had often the same origin. He then pointed to the contrast between the elaborate care taken in good schools to vary the occupations of children, to give them good air, light, and plenty of exercise, and the monotonous nature of the work done in the close, dusty, and often damp atmosphere of a factory. The Congress voted that children should not be allowed to work till they were fifteen years of age, and then only five days a week of eight hours each day till such time as they had reached the age of eighteen years.

On the third day M. Otto Lang, judge of the tribunal of the Zürich district, presented a report on the work of adult males. He pointed out that in several countries, notably Austria, France, and Switzerland, a maximum labour day for adults had been established by law, and this varied from eleven to twelve hours. Of course, women and children have the greatest need of such protection, but men may also overwork themselves. He complained of the attitude of the British Government. The Swiss Government, by its circular of Jan. 28th, 1890, had invited the nations of Europe to an international conference on labour protection, but the British Government refused to participate if the labour of adults was to be included in the subjects of discussion. It was also at the instance of Great Britain that this question was effaced from the programme of the Labour Conference convoked at Berlin in March, 1890, by the German Emperor, yet no authority had been more liberal in the reduction of the hours of labour in State factories, arsenals, &c., than the British Government. The Congress voted in favour of the eight-hours' day, though many speakers admitted that in the lighter occupations adult males could work more than eight hours without physical injury. It was from the moral rather than the physical point of view that the eight hours' legal limit was approved. The clerical element in the Congress was particularly anxious to restore family life which long hours of absence in the factory or workshop tended to destroy. This feeling was very forcibly manifested when on the following day the question of women's work was introduced by M. Jean Sigg, member of the Geneva Cantonal Parliament. He quoted with great effect the report of Dr. Schuler, Swiss Inspector of Factories, who showed that in his particular district the mortality of newly-born infants amounted to from 29 to 30 per cent. of the births, but that this mortality had been reduced to the extent of 5 per cent. by the law which forbids women returning to work till six weeks after their confinement. Among the textile workers of Ghent, on the other hand, the mortality of children, which amounted in 1886 to 452 per 1000, was equal to 482 in 1888, 620 in 1889, and 630 in 1890. More recent figures were not at hand, nor was any explanation given as to whether an epidemic prevailed during the last two years mentioned. But in any case it is evident that the mortality is excessive. On this phase of the question there was no difference of opinion, and the Congress unanimously voted that women should not be allowed to work till six weeks after their confinement. It was also thought that if legislatures should, as suggested in the former resolution, tend towards the reduction of the week's work to forty-eight hours for men, it should not exceed forty-four hours for women, and that women should not work more than eight hours on any one day. The Roman Catholics wanted to gradually but altogether abolish the work of women in factories. All these points were discussed on social, economical, ethical, and political grounds, but they were also related to the sanitary or health point of view. A woman who exhausted herself in factory work could not be a true mother to her children, and their health would consequently suffer. The British delegates, on the contrary, maintained that the work of women in factories was in any case less likely to be excessive and unwholesome than their work in small workshops or in their private homes. They proposed, not the abolition of factory work, but of home work. Neither party carried their point. By a large majority the Congress refused to vote in favour of abolishing women's work in factories, and it decided to refer the question of home work to a future congress. In the course of the discussion on the latter subject Miss Sullivan, of the London West-end Tailoresses Association, referred to many of the abuses denounced by THE LANCET in the course of its numerous Special Reports on the Sweating System.

On the fifth day Dr. F. Erismann, formerly Professor of Hygiene at the Moscow University, introduced the question of night labour, which had only come into existence with the introduction of steam power and the development of modern industrialism. Machinery was so expensive that its owners wished to employ it day and night, and it was only when the health of vast populations had been seriously injured that legislation interfered to protect, at least, the women and children. So far back as the year 1815 the Canton of Zürich forbade the night work of children in factories. This abuse was allowed to continue in England till 1834, and the measures taken were not thoroughly effective till some years after. After reviewing the laws of various countries Professor Erismann mentioned the German law of 1891 by which adult women are not allowed to work after 8.30 P.M. and before 5.30 A.M. Nowhere, except in Switzerland, do the laws absolutely abolish night work for all persons under eighteeen years of age. Such work is only restricted, exceptions are made, and in Germany there are no less than 2 000,000 factory hands who are liable to be called upon to do night work. Generally speaking, permissions for night work are too freely granted. The injury that results from night work is more readily proved by the benefits that have followed its abolition. When men had worked during their childhood in factories they became incapacitated for work early in life. Out of 22,094 Manchester workmen only 143 were found to have passed their forty-fifth year. On the other hand, when a check was placed on the excessive work of women and children in England it was proved that the weight of newly-born infants among the factory population greatly increased. The Zemstrov, or County Council of Moscow, has officially reported that among the cotton-spinners of their district a great physical deterioration has taken place, and many of the men are rendered unfit for military service. The mills run the whole twenty-four hours. There are two shifts, which work six hours each, or twelve hours a day, and therefore the men can never sleep much more

than five hours at a time. But even if sufficient sleep could be obtained during the day the nervous system is bound to suffer from taking rest at unnatural times. Thus, in Alsace-Lorraine, though among the wool-weavers the night hands worked 22 per cent. less time than the day hands, it was found, in 1888 and 1889, that there were 328 and 309 cases of illness per 1000 workwomen during 5641 and 5815 days where no night work was done. In other mills, where there was only partial night work, there were 429 and 413 cases of illness during 8730 and 8865 days of work for every 1000 workwomen employed. With regard to adult males Professor Erismann had no hesitation in saying that night work was also injurious to them, should be suppressed wherever possible, and only sanctioned in exceptional cases, and then it should not last longer than eight hours, and must be followed by sixteen hours' rest. Dealing next with unwholesome industries, statistics compiled by Hirt showed that out of 100 workmen who became ill from breathing the dust of factories, &c., from 13·3 to 18·0, according to the industry, became consumptive; whereas among those who worked in pure air, out of 100 cases of sickness only 11·1 developed phthisis. Where the dust contains some poisonous chemicals the injury done is of course much greater. At least 40 per cent. of the cotton-spinners who die in the hospitals of Russia die from chronic lung-disease. Speaking of mill-stone makers Professor Erismann said that the "sand contained in the lungs of adults was equal to 7 per cent. of the whole; with stone-cutters it amounted to from 23 to 24 per cent.; and, according to Meinel, was equal to 30·7 per cent. among glass-polishers. According to Lewin, the mortality from tuberculosis amounted to 8·25 per cent. among stone-cutters, and their average age was only twenty-four years. The researches made by Sommerfeld set forth that 90 per cent. of the stone-workers die from phthisis of the larynx, of the lungs, or chronic catarrh. Out of 187 stone-workers 25 per cent. had pulmonary phthisis, 7·9 per cent. phthisis of the larynx, and 66·6 per cent. chronic catarrh of the larynx." Thus were the various leading industries passed in review one after the other. Then a synopsis of the laws affecting them in the different countries was likewise given.

It was after thus examining a great mass of information that the Congress voted in favour of the total suppression of night labour for women and young persons, and defined the night as lasting from eight in the evening till six in the morning. It was acknowledged that for men in exceptional cases night labour must be allowed, but must never exceed eight hours in the twenty-four. Dangerous or unwholesome industries should, according to the resolutions carried, be very carefully specified and tabulated in the text of the law. Such industries should only be authorised when the fullest precautions have been applied. The employment of young persons under eighteen years must be absolutely forbidden. In dangerous industries the hours of labour must be shorter than in other occupations, and there ought to be periodical and official or governmental medical inspection of all the workpeople. The employment of poisonous substances wherever possible must be forbidden.

Of course, it will be said that all these demands, however estimable in themselves, are not practicable in the face of the exigencies of business. For this reason the Congress discussed on the sixth and last day the all-important question of ways and means. First, the Congress demanded that in every country a sufficient number of factory and workshop inspectors should be appointed to be able to visit every workplace at least twice in the year. This if costly is not an absolute impossibility. Then they demanded for the working-classes of all countries the fullest possible political freedom, so that they might not only influence legislature in the direction indicated, but form such trade and other societies as would see that laws were not merely enacted, but actually applied. Members of Parliament who sympathise with the objects of the Congress were invited to simultaneously present in their respective Parliaments similar projects of law. They were also to request their respective Governments to join in forming an international office for the protection of labour, where all information on the subject might be centralised and interchanged between the nationalities concerned.

Finally, the Swiss Government is asked to renew the effort it made in 1890 to bring about an international conference between representatives of the European Governments with the view of assimilating as far as possible the laws of the different countries which deal with the age at which young persons and children may work, the prevention of night labour, and the employment of women in dangerous occupations, Sunday rest, the maximum labour day, &c. Of course, the Congress was fully aware that the desiderata laid down in the resolutions was not to be realised in a day; but it felt that if in each country the various organisations, whether clerical or secular, that had these ends in view were to unite instead of quarrelling with each other, something effective would be much more easily accomplished. It would then be more difficult for legislators to neglect these questions, and in the face of such a manifest desire for an international understanding a good deal might be done to mitigate the danger of foreign competition when such reforms were introduced. If the movement follows faithfully these lines there is some chance that a portion, though probably only a small portion, of the measures demanded will be granted at no very distant future. In that case, and however fragmentary such improvements may be, there is little doubt but that they will tend towards an amelioration of public health. Under these circumstances this new and conjoint movement of parties and organisations which on so many other subjects are hostile to each other cannot fail to interest the members of a profession which is so intimately concerned with all that relates to the health of the people.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The High Death-rate.

CONSIDERABLE anxiety has been felt in the city owing to the unusually high death-rate in the last few weeks, reaching as much as 43 per 1000. Various causes have been alleged as the reason for this. Diarrhœa has claimed the greatest number of victims, but with this exception, and that of measles, the zymotic diseases have not appreciably increased the roll; 75 per cent. of the deaths from diarrhœa are in children under a year old. Many believe that defective sewage arrangements are the main cause of this, but the medical officer of health, Dr. Hill, points out that in the month of June, when the sewers had to be flushed without rainfall, the death-rate was very low and there was but little diarrhœa. Many complaints have been made about the sewers, and no doubt the population has increased enormously since these were laid down. At present an inspection is being made by the authorities, who will issue reports as the work proceeds. There are about 260 miles of sewers, so necessarily this overhauling will take some time. A great deal of surface water now runs into the sewers which it is beyond their capacity to carry off. Some means are proposed to divert this and thus limit the work they have to do. Some of the complainants go so far as to say that the town ought to be re-sewered, but the Health Committee point out that this would be a gigantic undertaking, involving many years' work and a probable cost of half a million of money. They are anxious to do all in their power to provide for efficiency, with a due regard to the various problems involved. In the meantime, it is satisfactory to know that the death-rate has been steadily diminishing from the high record noted.

King's Norton Workhouse Infirmary.

The new building at Selly Oak was formally opened on Sept. 3rd and is well calculated to meet the requirements of the population for some time to come. The total cost is estimated at about £210 per bed, and there are now 418 inmates in the workhouse. At present the site is about fourteen acres, and there is a possibility of the number of beds being increased up to 500 in the future. Nothing has been spared in equipment and arrangements to make the building a complete one for the purposes required.

Sept. 7th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Culvert Scheme.

THE report of the deputation from the Mersey and Irwell Joint Committee to the Local Government Board, as given in THE LANCET of Aug. 14th, clearly foreshadows some relaxation of the Board's hard and fast line requiring the filtration

of sewage through land, and also its sanction, in suitable cases, of artificial filtration. Sir Henry Roscoe, in his dual capacity of adviser to the Joint-Committee and the Manchester Corporation, against whom his committee is carrying out proceedings, has warmly recommended precipitation and artificial filtration, which is said to give a satisfactory effluent at Salford. At the meeting of the Manchester City Council, on the 1st inst., Alderman McDougal, who is not without chemical knowledge, threw grave doubts on the lasting properties of the filters. At the works at Davyhulme, though still doing good work, they are doing less of it. "They were gradually becoming coated, there was less space for water in them, and in three or four years the filters would have to be renewed." It is interesting to note that since the admission of the out-townships to the sewerage system there has been a change in the character of the sewage matters from the large admixture of the effluent from chemical works. "According to the tests of the joint committee twice as much oxygen as before was being absorbed; they were not precipitating as well, and the effluent was worse." But "in Whit week, when they got only domestic sewage, the effluent would have satisfied every requirement of the joint committee." Still, Alderman McDougal holds that the Manchester effluent is a very fair one and if sent into a running stream would do no harm. Unfortunately it goes into the putrescent and practically stagnant water of the Ship Canal. The scheme for applying artificial filtration to the whole of the sewage is found on calculation to be so costly as to be almost impracticable. In addition to the cost of the extension of the filters, which would be almost as great as the construction of the culvert to tidal water, their maintenance would require annually from £30,000 to £40,000. The Council therefore has abandoned the filtration scheme, and has decided almost unanimously in favour of the construction of "a culvert between six and seven feet in diameter and about sixteen miles long from the works at Davyhulme to the estuary of the Mersey." In introducing the question Mr. Saxon stated that it "would convey the effluent after the sewage had been treated by precipitation, as they were treating it at present by chemical processes and precipitation tanks. A very clear effluent would be passed through the culvert." The estimate for this culvert is £258,000, not taking into account law costs and Parliamentary expenses. After giving various reasons—as urgency, &c.—for the scheme he adds a suggestive remark: "The greatest reason of all, however, was that it took the [Rivers] committee out of the jurisdiction of the Mersey and Irwell Joint Committee, and they were consequently freed from their excessive requirements as to purity." It does not appear that the sludge is to be sent down the culvert, so that it will probably be carried out to sea at considerable cost. Alderman Hopkinson said truly that the scheme might be called "a policy of despair," and it is opposed to the ideal of "the sewage to the land."

Sept. 7th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

More Suicides in Liverpool by Carbolic Acid Poisoning.

IN THE LANCET of Aug. 14th comment was made, in the case of a suicide through poisoning by carbolic acid, on the easy means afforded to the public of procuring that drug. During last week no less than three more deaths from the same cause took place in Liverpool, all of which were investigated by the city coroner. Four suicides from the effects of carbolic acid poisoning occurring within one month ought to be sufficient evidence of the danger of allowing it to be so easily obtained by the public at large. Possibly these lamentable occurrences may stimulate the legislature to place greater restrictions on the sale of carbolic acid. Since writing the above it has just come to my knowledge that last night a married woman was admitted to the Royal Southern Hospital suffering from the effects of carbolic acid, and died shortly afterwards.

Increased Accommodation at Rainhill Asylum.

The chairman of the West Derby Board of Guardians intimated at the last meeting that the Lancashire Asylums Board had agreed to provide two hundred additional beds at the County Asylum at Rainhill. By these means the pressure occasioned at the local workhouses by the difficulty of removal will be considerably relieved.

Prospective Closing of Intra-Mural Cemeteries.

The proceedings of the Health Committee at their last meeting contained a recommendation for application to Parliament for power to close St. Mary's Cemetery, Walton-road; the Necropolis; St. George's Churchyard, Everton; St. Mary's Churchyard, Edge-hill; St. Michael's Churchyard; and St. James's Churchyard, Toxteth. It will be remembered that these comprise a portion of the cemeteries which were unfavourably reported upon by the medical officer of health and the closing of which he strongly recommended.

Typhoid Fever and Sewer polluted Shellfish at Waterloo.

A great number of cases of typhoid fever occurred last month in the Waterloo and Seaforth districts which, on investigation by the health authorities, were proved to be due in a great measure to eating mussels and cockles contaminated by sewage. The shellfish were collected by children from the foreshore, close to the outlet of the south sewers.

Sept. 7th.

WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

The Proposed Convalescent Home for Bristol.

MR. P. H. VAUGHAN has given £3000 to the proposed convalescent hospital for Bristol. The balance remaining to be collected is now £9500.

The Sewage of Bristol.

At a meeting of the Bristol Sanitary Committee, held on Aug. 26th, a communication was read from the Local Government Board calling attention to an application made by the local authority of Westbury-on-Trym with respect to a scheme in which it was proposed to pour the sewage of the place into the River Avon. The town clerk was instructed to inform the Local Government Board that the sanitary committee are now considering as to the best means of dealing with the sewage nuisance in the river. The chairman remarked that it would be a curious thing if, whilst considering how they could deal with the sewage nuisance in the river, they were to allow the Westbury sewage to be thrown into it.

The Epidemic of Typhoid Fever at Wadebridge.

At a meeting of the St. Columb Major District Council held last week a report was read from the *locum tenens* of the medical officer of health. It stated that the epidemic of typhoid fever at Wadebridge was caused by the deficient sanitary arrangements of that town; also that the water-supply, which is unfitted for the present requirements of Wadebridge, had been contaminated through the absence of a complete system of drainage and the unsuitable method of scavenging which is adopted. The report added that owing to the Infectious Diseases Notification Act not being enforced in the district three weeks had elapsed before the medical officer of health had knowledge of the outbreak, which had resulted in twenty-three cases, with two deaths.

Typhoid Fever Cases in the Swansea Hospital.

Two nurses from the Swansea General Hospital whilst nursing typhoid fever cases in Gower contracted the disease and were admitted into the Swansea Hospital. Some comments have occurred in the local press upon the subject, owing to the fact that enteric cases have not been admitted into this institution for several years, although in 1885 an unsuccessful effort was made to obtain permission for their treatment. It is difficult to see why the authorities of the Swansea General Hospital cannot follow the example of the majority of London and provincial hospitals and admit cases of typhoid fever.

Infectious Diseases Notification Act at Aberdare.

At the meeting of the Merthyr Tydvil board of guardians, held on August 28th, the Rev. Father O'Reilly moved that a representation be made to the Aberdare Urban District Council urging them to enforce the Infectious Diseases Notification Act. He said that in the opinion of the county medical officer of health it was essential that the Act should be adopted. The Rev. Father O'Reilly added that Aberdare was the only parish in Glamorganshire where the Act was not in force

and commented upon the danger arising from infectious diseases not being notified, stating that at present there were at least three suspicious cases of typhoid fever, and unless precautions were adopted the other inhabitants of the locality would be exposed to risk of infection. The chairman described the Act as unfair, because it provided for the infliction of penalties upon heads of families for failure to report. A division was taken, when twenty-one declared in favour of the motion, no one voting against it.

Sept. 7th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Lunacy in Scotland.

IN the thirty-ninth annual report of the General Board of Lunacy for Scotland, which was issued last week, the number of insane persons in Scotland on the first of January of the present year is stated to have been 14,500, of these 2217 were maintained from private sources, 12,221 by parochial rates and 62 at the expense of the State. During 1896, as compared with the previous year, there was a total increase of 383 registered lunatics. Pauper lunatics, under care for longer or shorter periods during the year, numbered in all 14,082. For these there was a total expenditure of £276,865; of this sum £115,761 was contributed from the local taxation account, and £13,403 was repaid by relatives and others. The average annual expenditure for each patient for the year 1895—1896 was £23 9*s* 3*d*. The report draws attention at some length to the necessity for providing further accommodation for the poorer class of paying patient. There is at present in Scotland very little provision for that class of patients who are able to pay little or nothing beyond the cost of board for pauper lunatics. The Royal asylums are so much in demand for the wealthy class of patients that it is impossible for them to accommodate more than a small number of patients at the very low rates. The district lunacy boards in Scotland have no power to provide accommodation for private patients. In both England and Ireland, however, this permissive power is held by the district boards. In consequence of these conditions it commonly occurs that persons who are unable to pay the higher rates of board are compelled to apply for assistance to the parochial authorities. The parish council as a rule consents to the admission of the patient as a pauper lunatic on the condition that part or the whole of the board be repaid to the parish by the relatives of the patient. As, however, by this procedure the patient is pauperised—is on exactly the same level as ordinary paupers, in spite of the payment of money—the relatives, as a rule, gradually endeavour to rid themselves of the burden of payment which, while burdening them, is not improving the condition of the patient. The report, therefore, recommends that legislative procedure be taken to confer on the Scottish district lunacy boards a similar power to that held by the boards in the sister countries—the power of providing accommodation for private patients. It recommends that, in framing such a measure, the following principles be kept in view. "1. District lunacy boards should be authorised to receive private patients, and also to provide accommodation for such patients, if they should see fit, by erecting separate buildings or by setting apart for the purpose sections of existing buildings. 2. Private patients being once received should be regarded as having a right of accommodation, and should not be liable to be removed to make room for pauper patients. 3. The rate of board chargeable for maintenance should not be higher than the maintenance rate charged for pauper patients, with the addition, if the district board should see fit, of a sum in name of rent for the accommodation afforded. 4. This sum in name of rent should not exceed a charge calculated on the net cost of what may be required to provide the buildings, and we believe it would be an eventual saving to the ratepayers if the district board were empowered to charge the maintenance rate only in cases where they are satisfied that a higher rate cannot be afforded."

Edinburgh Royal Infirmary.

At a meeting of the managers of the Royal Infirmary held on Sept. 6th Dr. Argyll Robertson was appointed consulting ophthalmic surgeon, his term of office as acting surgeon having expired.

Sept. 7th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Proposed Isolation Hospital for Dublin.

A DEPUTATION, representing the guardians of the North and South Dublin Unions, waited on the corporation on the 6th inst. and appealed for a site for an isolation hospital at the Pigeon House Fort. After a long discussion the Right Hon. Alderman Meade explained that the Government had proposed to hand over to the corporation the whole of the plot of land at the Pigeon House by April 1st of this year, but had been unable to do so, the portion now in their possession being only a one-third instalment absolutely required for the purposes of the main drainage undertaking. The construction of the isolation hospital, though acknowledged on all hands to be desirable and, indeed, essential, is thus again postponed.

The Richmond Lunatic Asylum.

Arrangements to accommodate some of the healthy patients from the infected Richmond Lunatic Asylum are now being pushed forward. The *Dublin Gazette* of Sept. 3rd contained an order directing that the buildings and premises at Grangegorman, lately known as the Grangegorman Prison, should be made suitable and equipped for the Richmond District Lunatic Asylum at a cost not exceeding £2500.

Simpson's Hospital, Dublin.

The trustees of this old-established hospital will proceed, on Monday, the 13th inst., to elect a trustee in the place of the late Mr. Samuel Hunt Close.

Queen's College, Belfast: The President's Report.

From the interesting report of the President of Queen's College, Belfast, which has just been published, I find that during the past session, 1896–97, there were 380 students in attendance, of whom the large majority—227—were in the Faculty of Medicine, showing the great importance of the College as a medical school. Reference is made to the triennial visitation during the session at which the Senior Visitor—the Marquis of Dufferin—presided, and spoke in most laudatory terms of the work done at the College. During the past year Professor Everett, F.R.S., resigned, and Mr. W. B. Morton, M.A., was appointed in his place. He was an old Queen's College student, and was his predecessor's assistant. Two new departments were opened during last session—ophthalmology and otology—under the charge of Dr. McKeown, and a department of sanitary science under the joint care of Dr. Letts and Dr. H. Whitaker. The event of the year was the celebration of the jubilee of the foundation of the college, when the Lord-Lieutenant, Lord Lister, Lord Kelvin, and Lord Roberts were present, and a special feature of this function was the inauguration of the students' union. The advantages of this most desirable union to the students are very many indeed. At the time of the college jubilee the Lord-Lieutenant opened the new physiological and pathological laboratories, and a special address was delivered by Lord Lister. A fully equipped and endowed chair of pathology and bacteriology is much needed, and it is hoped the present President, who since his appointment in 1889 has done so much for the college, will be able, through his influence with rich Belfast merchants, to induce some of them to endow this chair. In the college library 832 volumes were added during the year, and a professors' reading-room has been arranged and opened, and a new catalogue has been issued. The President makes a strong appeal for a new physical and biological laboratory and for the completion of the chemical buildings, and for more funds for the support of the various scientific departments of the college. This report shows what good work the college is doing, and that if there are to be any changes in university matters in Ireland it has a strong claim to be made the centre of an Ulster or Northern university.

Health of Belfast.

From the report presented at the meeting of the city corporation on Sept. 1st I find that, as stated by the medical officer of health, Dr. Whitaker, "the health of the city is very unsatisfactory and its death-rate abnormally high." The number of deaths from typhoid fever and the number of cases of that disease are nearly double that of the previous month. The heavy death-rate—27·0 per 1000 (7·7 from zymotic diseases and 6·6 from chest affections)—is mainly due to deaths from diarrhœa, which, numbering 13 in the last

report, have during the past month amounted to 154. The infantile mortality was very high—276 as compared with 98 in the previous month. Dr. Whitaker says that he cannot tell the causes of this excessive number of deaths, nor does he know where they occurred except in a very vague way. He thinks that the main cause was diarrhœa, but he should, he says, be able to state this definitely, as also the streets or houses in which the deaths occurred. It is evident that the "Notification of Infectious Diseases Act" is not being thoroughly worked in Belfast. In the discussion on the matter at the corporation Dr. O'Neill (a councillor) having referred to the necessity of seeing that the cases were notified and that the houses were perfectly examined and put right, a lay member of the Public Health Committee made an extraordinary statement which will have to be considered by the medical societies. Referring to the large number of cases of typhoid fever reported he said that diseases were manufactured—that diseases were reported by some medical men in Belfast that never had any existence. He gave as evidence of this the fact that nine cases of cholera (evidently "English cholera") had occurred in Belfast. This was the way, he pointed out, that diseases, and among others typhoid fever, were reported in Belfast, and considering the action of some of the members of the profession he stated publicly that he regretted having been the means of introducing the Notification of Diseases Act into the city.

Newry Workhouse.

On Aug. 28th the Newry Board of Guardians re-elected as master of the workhouse the person whom the Local Government Board[1] had, as a result of an investigation held by their inspector, called on to resign as being unfit for the office. On Sept. 4th a letter was read at a meeting of the board of guardians of Newry from the Local Government Board transmitting a copy of an order under seal removing the newly-elected master from office and directing him to quit forthwith the workhouse premises.

The Belfast Hospital for Sick Children.

Owing to the resignation of Mr. Stack, Dr. J. S. Morrow has been promoted to the post of visiting surgeon, and Dr. Robert Campbell has been appointed assistant surgeon in his place.

Sept. 7th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Instantaneous Radiographs.

M. PORCHÉ recently brought before the Academy of Sciences a technical detail which is an important improvement in radiography as applied to practical medical use. It is well known how the length of time required for exposure makes the taking of a radiograph exceedingly difficult, especially when the subject is a little child whom it is utterly impossible to keep absolutely still. M. Porché proposes to get over this difficulty by the use of a fluorescent screen, and instead of taking a radiograph directly on the plate to photograph the shadow on the screen. An extremely sensitive plate is required, and this plate must be protected from all other rays emanating from the Crookes's tube except those which actuate the fluorescent screen. The method proposed by M. Porché is practical, but its results depend essentially on the rapidity of the sensitive plate.

Suicides in Hospitals.

A series of suicides has just occurred in the hospitals in spite of the excellent surveillance which exists in these institutions, so that, whether owing to the contagion of example so characteristic of suicides or the large number of hopeless cases which are found in hospitals, this new epidemic is somewhat disquieting. At the Maternity Hospital a young woman, aged twenty-eight years, threw herself from a window on the third storey at five o'clock in the morning and was instantly killed. She had previously threatened the nurse by throwing a tumbler at her head, and it was while the latter went to seek assistance that the patient committed the fatal act. At the Tenon Hospital a woman, aged fifty-five years, who had been under treatment for a long time, destroyed herself in the water-closet in a way which showed remarkable resolution. She set her nightdress on fire at the gaslight, and was so badly burned that she died on the following day. The other hospitals report cases of a similar kind.

The late Sir J. Tholozan.

You have recently announced the death of Sir J. Tholozan, National Associate of the Academy of Medicine, Commander of the Legion of Honour, and Physician to the Shah. Formerly assistant professor at the Val de Grâce, he was nominated by the French Government to fill the difficult and diplomatic post of physician to that monarch. Although loaded with presents by the Shah, whose confidence he always possessed, he frequently asked to be allowed to resign and to return to France, a request which was invariably refused. In 1889, during the visit of the Shah to France, Dr. Tholozan who had secretly conveyed all his property with him, made an attempt not to return to Persia, and another military medical man was nominated by the French Government to take up his office, for it was very important not to break through the tradition that France should be the country to furnish the sovereigns of Persia with their medical attendant who is so frequently a political adviser also. But the Shah could not console himself for the absence of Dr. Tholozan. He sent back his new physician at the end of two years, and most likely would have sought aid from some other foreign nation had not Dr. Tholozan from a strong sense of duty gone back at the age of seventy years to resume the post. He sent a variety of communications to the Academy of Medicine dealing with the pathology, the epidemiology, and the hygiene of Asiatic diseases, and also sundry papers on natural history.

Rabies in Paris.

Reported cases of rabies in animals, especially in cats, are becoming more and more numerous in Paris, and M. Lépine, the Prefect of Police, has just addressed a circular to the police commissaries reminding them of their duties in the matter. The prefect complains that dogs or cats suspected to be rabid which have bitten people are frequently knocked on the head and buried by private people or somebody in authority before any examination has been made to establish the fact whether they were or were not rabid. Moreover, these cases of bites are not reported to the administration or are only briefly mentioned. This method of procedure appears to M. Lépine to be contrary to the spirit of the law, and possibly a matter of great danger to public security. Accordingly the prefect begs the police commissaries to use the utmost care in reporting every case of bite. In cases where the animal was apparently rabid the report should be accompanied by a certificate signed by a qualified veterinary surgeon, stating the condition of the animal found upon two visits made at an interval of six days. In cases of undoubted rabies the report should be as complete as possible as regards the bitten, whether they be human beings or animals. In addition, the prefect recalls the fact that a special service presided over by a veterinary surgeon attached to the prefecture of police has been established in the pound in the Rue de Pontoise, where every day animals suspected of rabies or definitely affected by it are visited or their dead bodies examined. Both visits and examinations are absolutely gratuitous. The circular also requests the commissaries of police to ask the owner of every cat or dog suspected of being rabid—that is to say, one which has been bitten or even knocked over by a rabid animal—to have it killed at once, in conformity with Article 10 of the regulations of July 21st, 1881. With regard to persons bitten by an animal, either rabid or suspected to be so, they are begged to repair at once to the Pasteur Institute, where they will be treated. In conclusion, the prefect asks the commissaries of police of the suburbs to put themselves in communication with the municipal authorities of their district and to ask for their coöperation as to any case of rabies which may be brought to their knowledge, and also points out that in every commune where a case of rabies has been reported no dog may go out except in a leash for the following six weeks.

Prophylaxis in Contagious Diseases at School.

M. Courmont has published at the Congress of St. Etienne a report on the part played by the closing (*licenciement*) of schools in the prophylaxis of transmissible illnesses. According to him similar methods might be employed in families by the dispersion of their members or by their transport in block. There are advantages and disadvantages associated with *licenciement* which is of course difficult of execution,

[1] THE LANCET, Aug. 14th, 1897, p. 420.

and precautions must be taken in accordance with the rules of epidemiology before the method can be of sanitary service to the community.

Sept. 6th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The "Istituto Antirabico" of Milan.

LIKE "wisdom," the Pasteur Institute in Paris "is justified of all its children"—of none more than the Milanese "Istituto Antirabico," which works on the lines of the parent institute with a fidelity and care that have their reward in a yearly diminishing death-rate from one of the most terrible of maladies. The "cure" it practises is a "prophylactico-preventive cure," so that, in strictness of language, its practitioners do not speak of "patients" or "cures" in the case of persons who, bitten by mad dogs undergo the "cura antirabica," but rather of such as it has "immunised" beforehand against the eventual hydrophobic infection they may have contracted. Thus premised, it is well to recall the fact that before the adoption of the "cura antirabica" out of 100 persons bitten by mad dogs there was a mortality fluctuating between a minimum of 20 per cent. and a maximum of 60 per cent. In this death rate the Pasteur method immediately wrought a signal diminution, causing it to sink to less than 1 per cent., a result obtained with not inferior success by the Milanese "Istituto," which, indeed, in this respect can boast a record scarcely equalled by the parent institute itself. The following statistics of the mortality in the Milanese "Istituto" suggest their own commentary:—

Years.	Per cent.
1889–91	1·00
1891–93	0·74
1893–95	0 54

In this connexion it may be well to add the figures of death from hydrophobia throughout Italy during the last decennium as these are given by the "Direzione Generale di Statistica" attached to the Agricultural Office under Government:—

Year.	Deaths from hydrophobia.
1886	136
1887	103
1888	106
1889	118
1890	75*
1891	97
1892	83
1893	83
1894	93
1895	53

* The asterisk indicates the year when the antirabic institutes were first opened in the Italian kingdom.

These figures, as I have said, speak for themselves and become even more eloquent when it is remembered that at least two-thirds of the above cited cases of death from hydrophobia are represented by individuals who had not been subjected to the treatment. But to return to the Milanese "Istituto." In the year now passing it had under treatment more than 250 persons bitten by undoubtedly mad dogs and it remanded without treatment some 150 more as not proper subjects for the same. Out of the former total there were 3 cases of hydrophobia, one of them not to be reckoned in the statistics because it terminated fatally twenty days after the bite and in the course of the "cura" itself, while the other two died without these qualifying circumstances. These two deaths out of the 250 cured and restored to perfect health constitute a result which, according to medical authority in the leading Milanese organ, the *Corriere della Sera*, is not only "satisfactory," but "such as to compare well with the results of past years classed as very good." The same journal quotes a distinguished compatriot physician as remarking: "It is not the case that persons under the hydrophobic access suffer those unutterable and unparalleled torments which many descriptive writers are prone to dwell upon. Death in these circumstances, indeed, cannot be called gentle or placid; but those who have witnessed it can attest that it is not more terrible or harrowing than death from tetanus, from various forms of heart disease, from pneumonia, or from typhoid fever. That which truly impresses and saddens the professional beholder is the impotence of the medical art to apply in such cases a treatment other than that of symptoms—its impotence to control a malady which inexorably runs its fatal course.' All the more, then, must the putative victim to a hydrophobic bite lose no time in placing himself under the special treatment of the "Istituto Antirabico," whose demonstrated success cannot but supply another condition of "cure"—to wit, the confidence which antagonises the depression so invariably incident to the lesion.

The Water-supply of Milan.

This has long been a *vexata quæstio* in the Lombard capital, never more so than at present when a formidable epidemic is filling its hospitals and scaring the travelling world from its hotels. At a meeting, on the 2nd inst., of its Consiglio Comunale the subject came up again, and in the course of discussion a number of facts leaked out which show how far the providing Milan with "acqua potabile," pure in quality and abundant in quantity, has yet to travel before being an accomplished fact. Several "consiglieri" were for postponing consideration of the question on the ground that the Junta, being about to resign, could not undertake pledges which would fall upon its successors. A majority contended that the matter was of such desperate urgency that it must be considered, if not put on a practical footing, then and there. Information was accordingly asked from the assessor and engineer, Signor Ponzio, as to the proposal to bring the desiderated supply from Garbagnate, and that gentleman, in a very lucid statement, referred to twenty-five different plans for providing Milan with "acqua potabile," and said that of these a technical commission appointed to consider the matter had cancelled seventeen. Of the remainder five were reserved for consideration, and that for transporting the water from Garbagnate was one of them. This, too, was in turn discarded by the commission, as it did not guarantee sufficient pressure to bring the water to Milan or to distribute it freely when brought; besides, the expenses required for the works were not adequately defined. Signor Ponzio concluded by maintaining that the Garbagnate plan must be relegated to the Greek Kalends, and added (what seems to be a fatal objection not only to it, but to all its rivals) that until the "fognatura" (drainage) was satisfactorily provided for the attempt to add to the volume and distribution of the "acqua potabile" would be tantamount to a blunder (*equivarrebbe ad un errore*). There was no answer forthcoming to Signor Ponzio's remarks, and the matter, though a vital one, remains *in statu quo*.

Experimental Hygiene in the Argentine Republic.

Improvement begets improvement nowhere more steadily than in science, and the "Istituto d'Igiene Sperimentale," founded by Professor Sanarelli in Montevideo, will soon have its counterpart in Buenos Ayres. With that object a Bill before the "Camera dei Deputati" of the last-named capital is rapidly proceeding through the several stages necessary to its becoming law. The management of the new laboratory, I hear, will be given to Professor Ferruccio Mercanti, the able sub-director of the "Istituto" over which Professor Sanarelli presides. Italians are congratulating themselves, and quite justifiably, on the progress their science is making in Southern America.

Sept. 5th.

CAMBRIDGE UNIVERSITY: EXAMINATION IN SANITARY SCIENCE.—The following is the order of examination for October, 1897. *Part* 1.—Tuesday, Oct. 5th: from 9 A.M. to 12 noon, Paper in Hygiene, in the Medical Schools, Downing-street, Cambridge; and from 2 to 6 P.M., Practical Bacteriology, in the Pathological Laboratory. Wednesday, Oct. 6th: from 9 A.M. to 12 noon, Paper in Hygiene, in the Medical Schools; and from 2 to 5 P.M., Practical Chemistry, in the Chemical Laboratory. Thursday, Oct. 7th: from 9 to 10.30 A.M., Paper in Bacteriology, in the Medical Schools; from 10.30 A.M. to 12 noon, Oral, in the Medical Schools; and from 2 to 6 P.M., Practical Microscopy and Oral, in the Physiological Laboratory. *Part* 2.—Tuesday, Oct. 12th: from 9 A.M. to 12 noon, Paper, in the Medical Schools; and from 1 30 P.M., Practical and Oral, in the Medical Schools. Wednesday, Oct. 13th: from 9 A.M. to 12 noon, Paper, in the Medical Schools; and from 1 30 to 5 P.M., Practical and Oral, in the Medical Schools. Thursday, Oct. 14th: at 10 A.M., Oral, in the Medical Schools.

Obituary.

JOHN BRAXTON HICKS, M.D., F.R.C.P. LOND., F.R.S.

JOHN BRAXTON HICKS was the second son of Mr. Edward Hicks, of Lymington, Hants, some time banker and for many years chairman of the bench of county magistrates, who was himself a native of Milford, Hants, which parish, together with the tything of Efford, originally belonged almost entirely to his immediate ancestors. The subject of this notice was born in 1823, and educated from the age of twelve to fifteen years as a private pupil of the Rev. J. O. Zillwood, of Compton Rectory, near Winchester. He then became an articled pupil of Dr. Fluder, of Lymington, until, on completing his eighteenth year, he entered as a medical student at Guy's Hospital, where he took first prizes in anatomy, materia medica, botany, and practical chemistry. Nor was Mr. Hicks unsuccessful in the world of athletics, for he obtained a medal for double sculling given by the then famous Guy's Hospital Boat Club.

In 1845 he passed with honours the first examination for the degree of Bachelor of Medicine at the University of London, obtaining an exhibition and gold medal for materia medica and a first (bracketed) in anatomy. In 1847 he passed the final M.B. with honours, and shortly afterwards became a Member of the Royal College of Surgeons of England and a Licentiate of the Apothecaries' Company. Four years later—in 1851—he obtained the M.D. at the University of London, and in the following year was elected a Fellow of the Linnæan Society. Ten years later Dr. Braxton Hicks was elected to the Fellowship of the Royal Society. He passed the examination for Membership of the Royal College of Physicians of London in 1859, and in 1866 was made a Fellow of the College. Dr. Hicks was appointed assistant obstetric physician to Guy's Hospital in 1858. Ten years later he became full obstetric physician and lecturer in obstetrics, and in ceasing his more active connexion with Guy's Hospital in 1883 he was made consulting obstetric physician. He was appointed examiner in obstetrics to the University of London and to the Royal College of Physicians of London from 1872–78, and again from 1889–93. In 1888 he accepted the invitation to the post of obstetric physician and lecturer at St. Mary's Hospital, and at the end of his term of service was appointed consulting obstetric physician to the same institution. For many years Dr. Braxton Hicks was physician to the Royal Maternity Charity, and afterwards consulting physician. For some years likewise he was physician to the Royal Infirmary, Waterloo-road. Dr. Braxton Hicks was President of the Obstetrical Society in 1871 and President and Orator of the Hunterian Society in 1879. He was also made an honorary Fellow of the Obstetrical Societies of Berlin, Edinburgh, and Philadelphia (U.S.A.), and of the American Gynæcological Society (U.S.A.). He was also corresponding Fellow of the Gynæcological Society of Boston (U.S.A.). To medical and scientific journalism Dr. Braxton Hicks has been a valued and voluminous contributor; he has also published many papers in Italian, American, and Australian medical journals. He was the original author of the "Combined External and Internal Version" (Longmans, 1864); also joint author of the "Earthworm and House Fly" (Van Voorst), engraving some of the illustrations with his own hand. From his boyhood upward he was a devoted student of natural science, and has published papers on original subjects in the Proceedings of the Royal Society. Among these may be noted "Eyes of the Invertebrata" and "Supplementary Forces concerned in the Circulation of the Uterus." In the Transactions of the Obstetrical Society he also published "Anatomy of Human Placenta." To the Transactions of the Linnæan Society he has contributed many papers on Zoology and Botany, and has described many groups of sensory organs on the surface of insects. In the same Transactions he also published papers on original researches on the "Lichens, Mosses, and Unicellular Algæ"; and papers on "Volvox Globator, Amœboid Vegetable Bodies," and "Gonidia of Lichens" have been contributed by him to the *Microscopical Journal*.

In the Medical Society's Transactions and the *American Journal* he has written papers on the "Effect of Movements of the Body on Respiration" and on "Abdominal Tension." Dr. Hicks was the inventor of some apparatus useful in nursing, in moving patients, also for making broths, &c. He was the founder of the Lymington Ambulance Centre for First Aid, and has given lectures to ambulance classes in the parish of St. George's, Hanover-square. He was also one of the post-graduate lecturers to medical men, and apart from his profession was for five years a vestryman in the parish of St. George, Hanover-square. A few months before his death he was elected Honorary Fellow of the Obstetrical Society.

Dr. Daniel Hooper writes to us as follows: "Braxton Hicks and I entered at Guy's Hospital in October, 1842, and were fellow students there till 1848; we sat on the same benches and fought for the same prizes and honours at the hospital and at the University of London. In those days Sir W. Gull coached the men who were preparing for the London degrees, and in his class were Hicks and myself, Wilks, Habershon, Cooper Forster, and others; now, alas, our coach and all his class, excepting Wilks and myself, have disappeared. Hicks and I were chums and worked together in our own rooms, in the dissecting-room, and in the chemical laboratory; we were both very fond of botany, and in the summer vacation used to exchange specimens of plants; his came from the New Forest, close to his home at Lymington, mine from the Sussex woods on my father's farm near Horsham. Hicks was a favourite pupil of Sir W. Gull and much liked by all who knew him. I shall never forget his amiable, cheerful expression, bright, piercing eyes, and noble forehead; his alacrity was remarkable; he was always busy—I never saw him idle for one moment—he would hurry with a very quick step to the lecture theatre, literally run down the steps (a huge volume of Pereira, perhaps, under his arm) to the bottom bench, and there sit motionless and attentive till the lecture was over. Of course, he carried off many prizes and honours at his school and university; and then, wishing to settle in practice and to marry, I introduced him to the late Mr. W. Moon, of Tottenham, whose assistant I was, and he bought a share of the practice. As a general practitioner he was popular and successful, but he was too good a man for Guy's Hospital to lose sight of, so he was invited to fill the post of assistant obstetric physician there. As is well known, he afterwards became full physician and finally consulting physician in his department. Hicks had an innate aptitude for scientific research, did much good work, and became a Fellow of the Royal Society. The profession has lost a distinguished member and I have lost one of my oldest and most esteemed friends."

ALFRED HALL, M.D. EDIN., F.R.C.P. LOND., &c., OF BRIGHTON.

DR. HALL, whose death we reported last week, was born in the year 1812, and so had reached the age of eighty-five years. He was the youngest son of Mr. John Cressy Hall, of Swanwick Grange, Alfreton, Derbyshire, barrister-at-law and Commissioner in Bankruptcy at Nottingham. He was the brother of the late Mr. Frederick Hall, J.P., barrister, of Furze Hill House, Brighton, a prominent and useful citizen. The honourable connexion of his family with the Bar is well continued in the person of his only surviving son, Mr. Marshall Hall, who with his sisters may be assured of the sympathy of a large number of members of the medical profession in the great loss they have sustained. Dr. Hall had a large number of qualifications, the earliest obtained being the Licentiateship of the Society of Apothecaries, taken so far back as 1834, and the Membership of the Royal College of Surgeons of England, taken in 1835. He graduated at Edinburgh University in 1840, writing a thesis on Hydrophobia. In 1850 he obtained the Fellowship of the Faculty of Physicians and Surgeons in Glasgow in which city he practised both before and after his marriage. In 1859 he became a Member of the Royal College of Physicians of London, and in 1873 was elected to the Fellowship. The history of Dr. Hall's qualifications well represents his honourable ambition and his standing and work in the profession, "moving up from high to higher," acting the part of a general practitioner most admirably and to the great satisfaction of his patients, first, we believe, in Glasgow, then in Hounslow, where he was in partnership with the late Mr. Frogley about the years 1854–56, and finally in Brighton, where he held a very high position. Those who knew him best, either as a man or as a physician, will most easily understand how he came to be consulted by distinguished members of his own profession in Brighton. Among these was the late Dr. Marshall

Hall. Though there was no relationship between the families Dr. Alfred Hall's intimacy with Dr. Marshall Hall was that of men who deeply esteemed each other, and Mr. Marshall Hall bears the name, and is the godson, of the famous discoverer of the reflex functions of the spinal cord. Dr. Alfred Hall, too, as will be remembered by readers of THE LANCET, was the medical attendant of its Founder while he was at Brighton during his last illness, and was always much appreciated by him. Dr. Hall did much work in connexion with the medical charities of Brighton, especially the Brighton, Hove, and Preston Dispensary and the Brighton and Hove Hospital for Women. He also took an active interest in the movement for improving the drainage of Brighton.

Dr. Hall, owing to the illness of the late Mrs. Hall, left Brighton for Tunbridge Wells in 1887, but soon after her death he returned to Brighton, for which place he had a great liking. He was a good man and a model practitioner, kind, frank, cheerful, well up in the latest improvements in medicine, and always exercising his mind and good common sense in the treatment of individual cases. His handsome face and form well agreed with his nature, and are not likely soon to be forgotten by his friends.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men have been announced:—Dr. Eduard R. von Hoffmann, Professor of Forensic Medicine in the University of Vienna, on Aug. 27th. He was born in Prague in 1837, and studied there under Purkinje, Jaksch, Haller, Hasner, and Bochdalek. From the time he took his degree in 1861 until 1865 he worked as assistant in the Institute of Forensic Medicine connected with the Bohemian University of that city. He afterwards delivered the professorial lectures until 1869, when he was appointed professor at Innsbruck, where he remained until in 1875 he was appointed to succeed Professor Dlauby in Vienna. He is chiefly known by his important Manual of Forensic Medicine, which was first published in 1878, and which has been translated into several languages.—Dr. Emerich Pcór, Emeritus Professor of Dermatology in the University of Budapest, on Aug. 21st, in his seventy-fourth year. In early life he had been intended for the priesthood and was for some time in a seminary. When the war of Hungarian Freedom broke out he enlisted in the army and fought with his comrades until the battle of Sziny, when he was laid up sick in hospital. His military experiences seem to have changed his views as to entering the priesthood, and instead of returning to the seminary he entered the University of Pesth as a medical student, taking his degree in 1856. After this he studied for a time in Paris and Vienna, and on his return to Budapest was appointed to lecture for Professor Sauer, being subsequently given charge of the skin department of the Rochus Hospital and becoming an extraordinary professor of dermatology. As a medical journalist Dr. Pcór takes a high rank, having founded and carried on, for many years alone, and afterwards with Dr. Dulácska as co-editor, the medical journal, *Gyógyászat*. He also deserves the thanks of his medical brethren for his activity in establishing a medical, social, and assurance association, called the *Orvosi kör*, of which he was president. For many years past he had been in bad health, and retired from his hospital work in 1890.

AN IMPROVED LIFEBOAT.—An officer in H.M. Customs residing at Bedminster, Bristol, has obtained a patent for a new lifeboat. He claims that it will live in any sea, is unsinkable, cannot be stove in or founder when put over the side of a vessel; that it can be mechanically propelled, and can be worked by either passengers or crew. There are two rudders, which will obviate the necessity of putting the boat about in a seaway and thus prevent the danger of capsizing.

SINGULAR DEATH AT GLOUCESTER.—An inquest was held in Gloucester on Sept. 2nd upon the body of a little boy aged six years. It appeared that the deceased went home on Aug. 31st and told his mother that he had been eating horse beans and was choking. The boy was sent to a medical man, but died before arriving there. A post-mortem examination showed that there were thirty-five horse beans in the deceased's stomach and another one in his larynx. The jury returned a verdict of death from suffocation.

THE TWELFTH INTERNATIONAL MEDICAL CONGRESS.

MOSCOW, AUG. 19TH—26TH.

The Grand Duke Sergé's Garden Party.

THE last of the social functions in Moscow in connexion with the Congress was certainly one of the pleasantest. This was the garden party given by the Grand Duke Sergé Alexandrovitch on the afternoon of Friday, Aug. 15th (27th). The garden party was held in the grounds of the Nekoutchnaia Palace—a prettily situated Imperial villa, not far from the famous Sparrow Hills. The central part of the very extensive park consists of terraced lawns sloping down to the River Moskva and thickly dotted with flower beds. In an ordinary summer these gardens must be beautiful, but unfortunately the intense heat of the present summer had quite parched up every blade of grass, and it was pitiable to see what should have been bright green lawns converted into brown, desert-like expanses, with not one green blade of grass left. There appeared to be some 500 or 600 guests at the party, though the number of invitations issued was said to be considerably greater. There were many military bands scattered about the park, and the refreshments, served in two long marquees, were on a truly Royal scale. Shortly after four the Grand Duke Sergé and the Grand Duchess Elizabeth entered the gardens and remained for an hour and a half, talking freely with their guests, of whom large numbers were presented to their Imperial Highnesses.

The Exodus from Moscow.

All through the week the daily number of Congressists leaving Moscow was considerable, and no little strain was put upon the resources of the railway officials, more particularly on the lines to St. Petersburg and to Warsaw. On the Thursday and Friday evenings (and possibly also earlier in the week) special Congress trains were run on both these lines. Some little discomfort was inevitable under the circumstances. The free railway-ticket did not guarantee a sleeping-car, and on the return journey (which in this respect differed from the journey to Moscow) Congressists were unable to secure beforehand a sleeping-berth merely by paying the extra fee on their member's ticket. To obtain a sleeping berth it was necessary to pay the ordinary railway fare as well as the extra sleeping-car fee, and to go by one of the ordinary trains. Many members did this, and so secured a relatively comfortable night. Those who omitted to do so found the special Congress trains somewhat overcrowded.

The Entertainments in St. Petersburg.

Large numbers of Congressists proceeded to St. Petersburg after the close of the Congress in Moscow. Most excellent and hospitable arrangements had been made by the profession in St. Petersburg for their reception. Just as in Moscow, they were met by students at the station, who were ready to give them all information and to help in obtaining rooms or lodgings. A word, and much more than a word, of recognition and gratitude is due to both the students of St. Petersburg and Moscow for the way they have played their part during the past fortnight. They have in many instances gone to immense trouble to be of assistance to members, and have been invariably and under trying circumstances the embodiment of courtesy, kindness, and good temper.

On Saturday the proceedings in St. Petersburg consisted of a private reception by the Prince and Princess of Oldenburg at the Saxe-Altenberg Palace in the afternoon, and a "rout" at the *Duma*, or Town Hall, in the evening. The latter was attended by large numbers of guests. The decorations which had been put up on a lavish scale for the reception of M. Faure a few days before had been allowed to remain. The hall is a fine one at all times, but it looked particularly well thus decorated.

On Sunday invited members of the Congress were conveyed by four special steamer from St. Petersburg to Peterhof. The boats were timed to leave at 10.30 A.M., and Peterhof was reached about noon. The large palace, with its curiously decorated rooms, dating from the time

of Peter the Great, was thrown open, and at one o'clock a champagne lunch was served in the ball-room and dining-room. The afternoon, which unfortunately turned out wet, was occupied in walking about the park, and watching the wonderful series of fountains, all of which were playing. The fountains of Peterhof are said to surpass those of Versailles, and it seemed quite conceivable on Sunday that this bold statement was true. They are unquestionably a wonderful and beautiful sight. Many members drove round the park and town either in Royal carriages, of which a certain number were provided, or in hired vehicles. The little palace of Monplaisir, built by Peter, and containing many relics of that monarch, seemed to be a centre of attraction. Owing to the bad weather many members returned to town by train, but others braved the rain and remained until the special steamers started on their homeward journey at five o'clock.

On Monday morning a reception was held by the Prince and Princess of Oldenburg at the Imperial (formerly the Oldenburg) Institute of Experimental Medicine. This is certainly a most splendidly equipped institution, and more than one expert present declared his opinion that it must now take its place as the first institution of the kind in Europe, adding that Paris, Berlin, and Vienna cannot show anything to equal it. Whether this is so or not in sober fact an Englishman can only look at this institute in admiration and despair. After an inspection of all parts of the institute lunch was served in one of the larger rooms. In the evening the last social function of the Congress was held. This was a "farewell reception" given by members of the profession in St. Petersburg to members of the Congress. It was held in the *Dvoryanskoé Sobranyé*, or Salle de Noblesse, the largest concert-hall in St. Petersburg. A very excellent concert of Russian music was provided, followed by a series of performances by male and female choirs, and some interesting singing and dancing by a large choir of gipsies. Finally the guests themselves danced the Russian mazurka and some other dances, and an early hour in the morning was reached before the reception came to an end.

SECTION IV. (A).

GENERAL THERAPEUTICS, PHARMACOLOGY, BALNEOLOGY, CLIMATOLOGY, AND PHARMACY.

Dr. P. N. TACOWLEFF (Moscow) read an interesting note on the Treatment of Pathisis, in which he pointed out that even now at the present day there really do not exist any recognised specific methods of treatment, climatic or otherwise, for dealing with phthisical patients. Some forms of phthisis are curable in warm climates, and some improve under the temperature and environment of high mountain altitudes. But whatever the climate or hygienic conditions, two things are common to every environment that is to be of service to the phthisical patient, and they are: the air must be pure and the food good and nourishing; also the regular supervision of a physician is necessary. According to Dr. Tacowleff, climate does not play the important *rôle* in phthisis that has been attributed to it. Hygiene and a due attention to the *régime* of life are of more importance. To send the patient to high altitudes or to low altitudes or to southern resorts, where he obtains no surveillance from a medical man and where no care is taken to see that he is properly fed, is wrong. Far better that any case which requires prolonged treatment should receive that treatment in the country of the patient's birth. For example, with the Russians, Dr. Tacowleff preferred to order sojourn in the Russian plains to any journeying to Southern health resorts. Properly managed sanatoria and special hospitals in Russia could, he was certain, compete successfully with many well-known European localities, warm climate or high mountains not being indispensable conditions to the phthisical. In the case of the poor he considered that the special hospitals should be near the centres of industry, where phthisis is particularly rife, to be of the first use to the community. This opinion became common in Russia in 1892, when the late Emperor Alexander III. founded the first public sanatorium at Chalila in Finland. Last year a separate pavilion for phthisical patients was arranged in the Hospital of the Grand Duke Nicholas at Kief; and in December of the same year the Emperor Nicholas II. gave a large sum of money and a site for the foundation of a similar sanatorium near St. Petersburg. Now the municipality of Moscow proposes to found a popular sanatorium, and suggestions of the same character have been mooted in several other Russian towns. In Russia, particularly in the great towns, public sanatoria for the phthisical poor, however, ought to be replaced, in Dr. Tacowleff's opinion, rather by special hospitals for the sick, hospital discipline diminishing the risk of infection. Moreover, in special hospitals all the sick could be treated without distinction, while in the sanatoria only the curable sick would be treated, and, as a consequence, there must be greater difficulty in enforcing proper regulations as to isolation. Finally, Dr Tacowleff came to the conclusion that in all the great towns of Russia it was now indispensable to build special hospitals for the gratuitous reception of the sick phthisical poor, and that the present sanatoria should be left for the better class who could pay, and who do not require the discipline of the hospital to prevent the risks of infection. From the hospitals the cases which are curable might be drafted into the sanatoria.

SECTION XIV.

HYGIENE.

Dr. A. M. KOROWINE (Moscow) read an interesting paper upon that familiar subject—the Drink Question. After premising that the question is one eminently for the consideration of medical men rather than of clergymen or lay philanthropists he came to the following conclusions among others: (1) That medical men should arrive at some idea when patients should be considered "moderate drinkers" and when "alcoholics"; (2) that they should study the influence and results of the exhibition of alcohol in disease in the cases of the abstainer and the non-abstainer; and (3) that they should make widely known the urgent need that exists that chronic alcoholic subjects should be treated as insane and be subject to confinement in asylums. Dr. Korowine's other conclusions were all directed towards obtaining for the disastrous effects of the alcoholic subject upon the community more direct notice from the medical profession. He wished his brother medical men to be more ready to recognise and point out to the public what are the ills, direct and indirect, that accrue to a nation through its drunkards, and to be more ready to lend their aid to any organisations at present working in the cause of temperance.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin*: Dr. T. W. Engelmann, Professor of Physiology in the University of Utrecht, has been appointed to the chair vacant by the death of Dr. du Bois Reymond.—*Copenhagen*: Dr. Leopold Meyer has been appointed Professor of Midwifery and Gynecology in succession to the late Dr. Stadfeldt.—*Heidelberg*: Dr. L. Brauer has been recognised as *privat-docent* of Internal Medicine.—*Kharkoff*: Dr. Ponomareff, Extraordinary Professor of Children's Diseases, has been appointed Ordinary Professor.

THE SALE OF COCAINE IN THE UNITED STATES.—It is announced that the State Legislature of Illinois has enacted the following law respecting the sale of cocaine: "Section I.—Be it enacted by the People of the State of Illinois, represented in the General Assembly, It shall not be lawful for any druggist or other person to retail or sell or give away any cocaine hydrochlorate or other salt of or any compound of cocaine or preparation containing cocaine, or any salts of or any compound thereof, excepting upon the written prescription of a licensed physician or licensed dentist, licensed under the laws of the State, which prescription shall only be filled once; Provided, that the provisions of this section shall not apply to sales in the usual quantities at wholesale by any manufacturer or wholesale dealer, when such manufacturer or wholesale dealer shall have affixed to the box, bottle, or package containing such cocaine hydrochlorate or other salt or compound of cocaine or preparation containing cocaine a label specifically setting forth the proportion of cocaine contained in any preparation. Section II.—Every person who shall be found guilty of violation of the provisions of this act shall, for the first offence, be fined a sum not less than $10 nor more than $50, and for each subsequent offence not less than $15 nor more than $200, or imprisonment in the county jail not exceeding thirty days, or either or both, in the discretion of the court."

HEAVY RAINFALL IN BRISTOL.—It is stated that with one or two exceptions the rainfall of August was the heaviest since 1860. During the month about 8 inches were registered in Bristol, and in the twenty-four hours ended Aug. 31st 2·49 inches fell. The average fall of rain for August for the fifty years 1841-1890 was 2·35 inches, and during August last year only 2·06 inches fell.

THE Sussex County Hospital has received £822 10*s.* 7*d.* out of the fund raised for the celebration of the Queen's Diamond Jubilee in Brighton, towards the cost of erecting the proposed Nurses' Home. This was the surplus left after paying for the various festivities in the town, and a cheque for the amount has been forwarded by the Mayor (Alderman Sir J. G. Blaker) to the hospital secretary (the Rev. W. H. Orton).

BEQUESTS TO ENGLISH HOSPITALS.—The secretary of the Princess Alice Hospital, Eastbourne, has received a communication to the effect that the late Baroness Solvyns left a considerable sum to be divided between the Société de Bienfaisance Belge, the London Fever Hospital, and the Princess Alice Memorial Hospital at Eastbourne, in memory of the late Baron Henry Solvyns, formerly Belgian Minister in London. The executor is prepared to pay £400 at once to the Eastbourne Hospital, and a further sum is about to be obtained from the sale of a house in New York.

THE honorary secretaries of the Prince of Wales's Hospital Fund have received from Mr. W. Y. Campbell, of Johannesburg, South African Republic, the generous contribution of £1602 5*s.* 3*d.*, made up of sums contributed by the following bodies:—The Queen's Record Reign Witwatersrand Celebration (W. Y. Campbell, treasurer)—British residents of Witwatersrand, Transvaal, £1452 5*s.* 3*d.*; Britons of Potchefstroom (per Mr. Mountfield), £120; the Nigel Gold Mining Company, Limited (A. Grant, general manager) and employés, £30; total, £1602 5*s.* 3*d.*

FORMIC ALDEHYDE AS A DISINFECTANT.—Some interesting experiments on the production of formic aldehyde and its efficacy as a disinfectant have been published by Dr. F. C. Robinson, who investigated the subject at the instance of the Maine State Board of Health. He at first used an ordinary lamp with thin platinum, or platinised asbestos, above or surrounding the wick. He found the asbestos better than sheet platinum, but the amount of gas obtained was insufficient, and he subsequently devised the following arrangement, which seemed to him to be very satisfactory. A disc of moderately thick asbestos board was perforated with small holes close together, and then platinised in the usual way, using quite a strong solution of platinic chloride. If now a shallow dish, cylindrically formed, and of such a size that the perforated asbestos disc will just cover its top, be partly filled with methyl alcohol, it serves as the lamp font. If the platinised disc be wetted with the alcohol, seized in a pair of forceps or small tongs, removed from the dish, and the alcohol lighted, it will, by the time its alcohol burns away, be heated sufficiently, so that when placed over the lamp-font again it will continue hot and change the alcohol to formaldehyde. Experience shows that with proper depth of dish and suitable holes for the admission of air the disc keeps of a proper redness to bring about the change most efficiently. In order to avoid all chance of the alcohol catching fire, and to provide for regulation of the air-supply, Dr. Robinson constructed an apparatus the advantage of which is that it is easily used and the amount of alcohol changed in a given time depends upon the size of the disc. A disc about six inches in diameter serves to change a litre per hour, and this is about as much as is ever wanted. This form of apparatus also seems to give a larger yield of aldehyde than any other. It exposes a much larger surface of platinum to the alcohol and air than any other, and keeps it at a more uniform temperature. Having constructed a lamp in the manner described Dr. Robinson next undertook a series of experiments, which in general tended to confirm the results of others. In a room containing about 3000 cubic feet, and having three large windows with very loose sashes, he found that one litre of alcohol being used and the room being closed for four hours, infected matter was not completely sterilised if it was covered up or concealed to any great extent, but when two litres were used, or even one and a half, complete sterilisation resulted in about three and a half hours. Diphtheria and typhoid cultures were rendered completely sterile, so that there was no turbidity in any of the cultures within two days.

MEDICAL MAGISTRATE.—Mr. Roger R. S. Mackinnon, M.B., Ch.M. Syd., of Wagalda, New South Wales, has been appointed a magistrate for the colony.

AT the annual meeting of the School of Mines, Bendigo, Australia, Mr. O. Penfold, M.R.C.S. Eng., L.S.A. Lond., Honorary Medical Officer to the Bendigo Hospital, was elected President.

NEGRO MEDICAL PRACTITIONERS.—The Chicago *Railway Surgeon* mentions as an exceptional occurrence that a negro woman, Emma Wakefield, of Louisiana, has graduated in the medical department of the New Orleans Coloured University and lately was licensed to practise by the Louisiana Board of Examiners. According to the *North Carolina Medical Journal* a negress was licensed in North Carolina in 1894. The *Maryland Medical Journal* states that a congress of coloured physicians met in Washington last July to perfect arrangements for a national association of the physicians of that race.

THE SANITARY INSTITUTE.—The sixteenth congress of the Sanitary Institute will be held at Leeds from Sept. 14th to Sept. 18th. A reception room will be opened at the town hall on Sept. 13th, at 12 noon, and on the following days at 9 A.M. for the issue of all tickets in connexion with the Congress. On Sept. 14th the reception of the members will take place in the town hall at 12.30 P.M.; there will be a public luncheon in the large hall, Yorkshire College, at 1.30 P.M.; and the inaugural address by the President (Dr. Robert Farquharson, M.P.) will be delivered in the Yorkshire College at 3 P.M. On Sept. 15th the following conferences will meet: River Pollution (President, Major L. Flower); Municipal Representatives (President, Councillor B. Womersley); Medical Officers of Health (President, Dr. Edward Seaton); Municipal and County Engineers (President, Mr. Thomas Hewton); Sanitary Inspectors (President, Mr. Peter Fyfe, Glasgow); and Domestic Hygiene (President, Mrs. Fawkes). The sectional meetings on the following subjects will be held in the town hall on Sept. 16th and 17th: Section I., Sanitary Science and Preventive Medicine (President, Mr. T. Pridgin Teale); Section II., Engineering and Architecture (President, Mr. Lewis Angell); and Section III., Chemistry, Meteorology, and Geology (President, Mr. William Whitaker). The closing general meeting will be held in the town hall on Sept. 17th, at 5 P.M. Saturday, Sept. 18th, will be devoted to excursions. The health exhibition in connexion with the Congress will be open from Sept. 14th to Oct. 9th.

PRESENTATIONS TO MEDICAL MEN.—Mr. Hugh Kirkland, M.B., Ch.M. Glasg., of Bathurst, New South Wales, was entertained at a smoking concert on June 2nd and afterwards made the recipient of an illuminated address.—Mr. Charles N. Simons, L.R.C.S. Irel., lately of Brighton, Victoria, Australia, has been presented by the residents, on the occasion of his leaving the district, with a purse of sovereigns and an illuminated address. The mayor, on making the presentation, referred to the sanitary improvements in the town effected by Mr. Simons in his capacity as health officer.—Mr. John Wood, M.B. Oxon., L.R.C.S. Edin., of Walsall, Staffordshire, on his removing from that town received the gift of an ebony and gold clock, and a richly illuminated address. The clock bears the following inscription: "Presented to John Wood, Esq., M.A., M.B., on his resigning his position as senior physician to the Walsall and District Hospital, by members of the Committee and a few other friends. August, 1897." Dr. Wood was connected with the hospital for the long period of twenty years, and has rendered valuable and appreciated services to the institution as surgeon and physician.—At the recent annual meeting of the Bentinck Colliery Ambulance Class, held in the Kirby Board School, Mr. John Mackenzie, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., was the recipient of a timepiece, barometer, and thermometer as tokens of acknowledgement for his lectures on First Aid. The class, which is a large and successful one, was held for the first time last year in connexion with the new Bentinck Colliery, and will be resumed during the coming winter.—On the occasion of his leaving Llandilo through continued ill-health, after practising there for eleven years, Mr. Rees Morgan, L.R.C.P. Edin., L.F.P.S. Glasg., has been presented by his patients and friends at Llandilo and district with an artistically printed

address and an oil painting of himself. At the same time Mrs. Morgan was the recipient of a tea service.

BILLINGSGATE AND THE HOSPITALS.—The *City Press* says: "In 1892 Mr. Sol Parker, of Billingsgate Market, founded a fund in connexion with the market for assisting the various hospitals of the metropolis, and the fund is not only still in existence, but is in a flourishing position. The patrons include the alderman of the ward (Sir Reginald Hanson, Bart., M.P.) and Mr. Deputy Sayer. Last year the amount collected was nearly £150, while there were 540 letters distributed. It is proposed this year to make a further step in advance, and to hold some athletic sports in aid of the fund. These will take place on Monday, the 13th inst., at the Memorial Recreation Grounds, Canning Town. The City Band will be in attendance. Miss Gertrude Sayer has kindly consented to distribute the prizes."

THE DAVID LEWIS TRUST.—The two public recreation grounds given by the Lewis trustees, one for Manchester, at Blackley, adjoining Boggart Ho' Clough, and the other for Salford, on the Broughton side of Peel Park, have recently been opened with some ceremony. The Blackley ground, of about nineteen acres, was bought for £8000, and £9000 have been spent in laying it out. A bowling-green, gymnasium, tennis courts, and bandstand have been provided, but the greater portion has been set aside as a playground for children, mainly for cricket and football. The Salford ground is still larger. It was purchased for £10,000 and laid out at a cost of £5500, and the trustees have promised a further sum of £245 for trees and shrubs. Certain parts of the grounds are to be set aside "for the sports of children of both sexes under fourteen years of age." The deed also prohibits "the holding of meetings, demonstrations, gatherings, or services." The somewhat elaborate scheme of the trustees for the amalgamation of St. Mary's Hospital and the Southern Hospital was burdened with conditions that the managers, of St. Mary's Hospital especially, considered too arduous, and it broke down. At the luncheon at the town hall Sir William Houldsworth, M.P., one of the trustees, gave utterance to a significant remark. Speaking of the difficulty of spending money wisely he said: "At one time they had thought of assisting the hospitals of the city in some way or other, and especially the hospitals for women and children. It was generally supposed that no difficulty would be experienced in giving funds to a hospital, but they at any rate had found one." He went on to say that it might turn out a blessing, for "they seemed now to be going on the lines of trying to prevent disease." Presumably therefore the hospitals must not hope for help from the trust, and the danger is once more shown of looking a gift horse in the mouth. It is certain, however, that these gifts are as wise as they are munificent.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.*

BABINGTON, S. N., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

BATTEN, WM. S., M.R.C.S., L.S.A., has been re-appointed Medical Officer for the Second Sanitary District of the Calne Union.

BOWRING, G. E., B.A. Cantab., has been appointed a Clinical Assistant at the Convalescent Home, Cheadle.

COBB, E. H., L.R.C.P., M.R.C.S., has been appointed Clinical Assistant in the Special Department for Diseases of the Skin at St. Thomas's Hospital.

COOPER, H. G., L.R.C.P., M.R.C.S., has been appointed a House Physician to the Manchester Royal Infirmary.

CURLING-HAYWARD, W., M.R.C.S., L.R.C.P., has been appointed House Physician to Charing cross Hospital.

DACEY, S. H., M.R.C.S., L.R.C.P. Lond., has been appointed Resident Clinical Assistant, vice W. S. Nicholl, resigned.

FAIRBAIRN, J. S., B.A., M.B., B.Ch. Oxon., L.R.C.P., M.R.C.S., has been appointed Senior Obstetric House Physician to St. Thomas's Hospital.

FRAZER, W. D., L.R.C.P., M.R.C.S., has been re-appointed Clinical Assistant in the Special Department for Diseases of the Ear at St. Thomas's Hospital.

GILBERT, L., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

GOODE, H. N., L.R.C.P., M.R.C.S., has been appointed House Physician to St. Thomas's Hospital.

GREEN, REGINALD, M.D., B.Hy., has been re-appointed Medical Officer of Health and Medical Superintendent to the Fever Hospital for the County Borough of Gateshead.

HALL, J. S., L.R.C.P., M.R.C.S., has been appointed Assistant House Surgeon to St. Thomas's Hospital.

HARTLEY, H., M.B., Ch.B. Vict., has been appointed a House Surgeon to the Manchester Royal Infirmary.

HINDLEY, G. D., B.A. Oxon., L.R.C.P., M.R.C.S. has been appointed Junior Obstetric House Physician to St. Thomas's Hospital.

HOPKINSON, E., B.A. Oxon., L.R.C.P., M.R.C.S., has been appointed Senior Ophthalmic House Surgeon to St. Thomas's Hospital.

HUNTER, A., M.B., C.M. Aberd., has been appointed Medical Officer of the Aberdeen Dispensary, vice J. A. R. Glennie, resigned.

JONAS, H. C., L.R.C.P., M.R.C.S., has been re-appointed House Physician to St. Thomas's Hospital.

LLOYD, D., L.R.C.P., L.R.C.S. Edin., has been appointed Medical Officer of Health by the Newcastle Emlyn Rural District Council.

MCCLEAN, J. F., L.R.C.P., M.R.C.S., has been appointed Assistant House Surgeon to St. Thomas's Hospital.

MCDOUGALL, ALAN, M.B., B.Ch. Vict., M.R.C.S., has been appointed Resident Medical Officer at the Manchester Royal Infirmary.

MCDOUGALL, W., M.A., M.B., B.C. Camb., has been appointed House Physician to St. Thomas's Hospital.

MARMION, E. J., M.B. Durh., L.F.P.S. Glasg., has been appointed Medical Officer of Health by the Milton Urban District Council.

MARRIAGE, H. J., L.R.C.P., M.R.C.S., has been appointed Assistant House Surgeon to St. Thomas's Hospital.

MORGAN, THOS., L.R.C.P., L.R.C.S. Irel., has been appointed Medical Officer of Health for the Borough of Montgomery.

MORGAN, W. H., M.R.C.S., L.R.C.P., has been appointed House Surgeon to Charing cross Hospital.

MUIR, J. O., M.B. Cantab., L.R.C.P., M.R.C.S., has been appointed a House Surgeon to the Manchester Royal Infirmary.

MYERS, W., M.A., M.B., B.C. Camb., B.Sc. Lond., L.R.C.P., M.R.C.S., has been appointed Clinical Assistant in the Special Department for Diseases of the Throat at St. Thomas's Hospital.

OSBORN, E. C., L.R.C.P. Lond., has been appointed First Assistant Medical Officer at the Infirmary, Parish of Kensington.

PATERSON, W. H. J., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

PATTERSON, J. H., M.B., C.M. Edin., has been appointed House Surgeon to the Huntingdon County Hospital.

PENFOLD, OLIVER, M.R.C.S., L.S.A., has been appointed Honorary Surgeon to the Bendigo Gold District General Hospital, Bendigo, Victoria, Australia.

REED, J., M.R.C.S., L.S.A., has been appointed a Public Vaccinator for the Ashurst District, New Zealand.

ROUILLARD, J. A. A., L.R.C.P., M.R.C.S., has been re-appointed Clinical Assistant in the Special Department for Diseases of the Throat at St. Thomas's Hospital.

SANGUINETTI, H. H., B.A., M.B., B.Ch. Oxon., L.R.C.P., M.R.C.S., has been appointed Assistant House Surgeon to St. Thomas's Hospital.

SCOTT, H. HAROLD, M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon to the Teignmouth Hospital, South Devon.

SELIGMANN, C. G., L.R.C.P., M.R.C.S., has been re-appointed House Physician to St. Thomas's Hospital.

SMITH, ROBT., F.R.C.S. Edin., L.R.C.P., L.R.C.S. Edin., has been appointed Health and Medical Officer to the Police, Gaols, and Paupers, Tasman and Forestier Peninsulas.

STAINER, E., M.A., M.B., B.Ch. Oxon., has been appointed Clinical Assistant in the Special Department for Diseases of the Skin at St. Thomas's Hospital.

STANFORD, W. B., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Workhouse and Infirmary of the parish of St. Mary, Islington, vice C. S. J. Wright, resigned.

STOKER, H., L.K.Q.C.P. Irel., L.R.C.S. Irel., has been appointed Health Officer and Superintendent of the Quarantine Station, Point Nepean, Victoria, Australia, vice S. H. Browning.

SWEET, G. B., M.B., Ch.M. Syd., has been appointed a Public Vaccinator at Whangarei, New Zealand.

TUKE, A. W., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

TURNER, S. D., L.R.C.P., M.R.C.S., has been appointed Clinical Assistant in the Special Department for Diseases of the Ear at St. Thomas's Hospital.

TYRRELL, F. A. C., B.A., M.B., B.C. Camb., L.R.C.P., M.R.C.S., has been appointed Junior Ophthalmic House Surgeon to St. Thomas's Hospital.

WOOLLEY, G. T., M.R.C.S., has been appointed Health Officer for Castlemaine, Victoria, Australia, vice Dr. Reid.

WOOLLISCROFT, W. W., M.R.C.S., L.R.C.P., has been appointed House Surgeon to Charing-cross Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BATH ROYAL UNITED HOSPITAL.—House Surgeon, for one year. Salary £60, with board, lodging, and washing.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Birmingham.—Assistant House Surgeon. Salary £50 per annum, with apartments and board.

BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer for six months. Board, lodging, and washing provided. Conditional honorarium of £10.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant.

GENERAL HOSPITAL, Birmingham.—Anæsthetist, for one year. Salary £40.

GUEST HOSPITAL, Dudley.—Resident Assistant House Surgeon for six month. Board, lodging, and washing in the hospital provided.

HOSPITAL FOR WOMEN, Soho-square, London.—Assistant House Physician, non-resident, for three months.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon. All for six months. Salary of House Physician and House Surgeon each at the rate of £40 a year, and of the Assistant House Physician and Assistant House Surgeon each at the rate of £20 a year.

ROYAL CORNWALL INFIRMARY, Truro.—House Surgeon, unmarried. Salary, first year, £120, increasing by £10 a year to £150, with furnished apartments, fire, lights, and attendance.

SALOP INFIRMARY, Shrewsbury.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHPORT INFIRMARY.—Senior House Surgeon. £80, tenable for two years. Junior House and Visiting Surgeon. £30, tenable six months, and renewable. All found.

STAFFORDSHIRE GENERAL INFIRMARY, Stafford.—Assistant House Surgeon. Salary £30 per annum, with board, lodging, and washing.

WEST HAM HOSPITAL, Stratford, E.—Junior House Surgeon for one year. Salary £35 per annum, with board, residence, &c.

Births, Marriages, and Deaths.

BIRTHS.

BLAKE.—On Sept. 6th, at Elsinore, Ventnor, Isle of Wight, the wife of Victor John Blake, M.B., B.S. Lond., M.R.C.S. Eng., &c., of a daughter.

BUCHANAN.—On Sept. 4th, at Hammersmith-terrace, W., the wife of G. S. Buchanan, M.D., of a son.

HAWES.—On Sept. 3rd, at Pangbourne, the wife of G. Charles B. Hawes, M.R.C.S., L.R.C.P. Lond., of a son.

RENDALL.—On Aug. 21st, at Aix-les-Bains, France, the wife of Stanley Rendall, M.D., of a daughter.

WREFORD.—On Sept. 1st, at Mount Edgcumbe-gardens, Clapham-road, the wife of S. Wreford, M.R.C.S., of a son.

MARRIAGES.

HADLEY—CHARRINGTON.—On Sept. 1st, at Holmbury St. Mary, near Dorking, Wilfred J. Hadley, M.D., of Harley-street, Cavendish-square, W., to Joanna Margaret, widow of the late Ernest Charrington, of Parkside, Reigate.

HILDIGE—LIDDELL.—On Sept. 4th, at St. Michael's Church, Burleigh-street, Strand, London, Henry Johnson Hildige, L.R.C.P., and L.R.C.S.I., of Brookfield, Pinner, to Mary Evelyn, youngest daughter of William Liddell, J.P., Banogue House, Donacloney, Lurgan, Ireland.

HOUGHTON—LARKIN.—On Sept. 1st, at the Church of the Sacred Heart, Quex-road, Kilburn, Murtaugh James Houghton, M.R.C.S., L.R.C.P., son of the late Matthew Parsons Houghton, of Radford House, Coventry, to Kathleen, daughter of Hugh Larkin, of Kenilworth-road, Brondesbury.

KEELE—ATKINS.—On Sept. 2nd, at the Parish Church, Rocester, David Keele, M.R.C.S., L.R.C.P., son of George Thomas Keele, M.R.C.S., of Highbury, to Jessie Augusta, second daughter of William Atkins, of Rocester, Staffordshire.

MANNING—COLES.—On Sept. 1st, at the Priory Church, Malvern, Thomas Davys Manning, M.B., B.S., of Hoddesdon, Herts, to May, only daughter of the late Colonel C. H. Coles, Bombay Staff Corps (9th Bo. I.).

RUBEL—WYNNIATT.—On Sept. 7th, at the Church of St. Peter and St. Paul, Temple Ewell, near Dover, by the Rev. John Turnbull, M.A., Vicar, assisted by the Rev. S. M. Statham, M.A., John Leopold Rubel, M.R.C.S. and L.R.C.P., only son of J. Rubel, Esq., Wood-lane, Shepherd's-bush, to Maude, elder daughter of the late James John Wynniatt, late 52nd Light Infantry and 10th Royal Hussars.

SKERRETT—KERRY.—On Aug. 31st, at St. Giles's, Camberwell, Frederick Thomas Skerrett, Surgeon-Captain, Army Medical Staff, to Rose Edith, elder daughter of the Rev. F. F. Kelly, LL.M., Vicar of Camberwell.

WATKIN-DAVIES—METHVEN-ROBERTS.—On Sept. 4th, at All Saints', Margaret-street, E. D. Watkin-Davies, B.A., M.B., T.C.D., younger son of the late Rev. D. Watkin-Davies, M.A., Rector of Llanrhyddlad, Anglesey, to Frances Methven, widow of the late R. Methven-Roberts, of Plas yn Green, Denbighshire.

YOUNG—STRANG.—On Sept. 1st, at All Saints Church, Blackheath, by the Rev. Hamilton S. Cobb, M.A., of St. Mark's, Lewisham, assisted by the Rev. W. L. Groves, M.A., Hugh Corbett Taylor Young, M.D., C.M., of Sydney, N.S.W., to Annie Rankin, only surviving daughter of William Strang, of Blackheath, S.E. Australian and New Zealand papers please copy.

DEATHS.

COLLEY.—On Sept. 1st, at Ladismith, Cape Colony, South Africa, Courtenay Rossiter Colley, M.R.C.S., L.R.C.P. Lond., elder son of the late Charles C. Colley, of Carisbrooke, Mount Nod-road, Streatham, aged 27 years.

DALE.—On Sept. 2nd., suddenly, at Nightingale-park-crescent, Wandsworth-common, George Cornelius Dale, M.D., aged 75 years.

FORRESTER.—On July 22nd, at Wycheproof, Victoria, Australia, after a few days' illness, of pneumonia, Robert Alexander Paul Forrester, B.A., Trinity College, Dublin, and M.B., C.M. Edinburgh University, only son of Paul Robert Forrester, late English master, Kilmarnock Academy, and Fellow of the E.I.S. Friends will please accept this intimation.

TURNBULL.—On Sept. 6th, at Tunbridge Wells, James Muter Turnbull, M.D., F.R.C.P., late of Liverpool, Consulting Physician to the Royal Infirmary, aged 79 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 9th, 1897.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb	Remarks at 8.30 A.M.
Sept. 3	29·79	N.W.	...	110	64	50	50	55	Fine
" 4	29·94	W.	0·08	102	59	45	47	52	Fine
" 5	30·07	S.W.	0·42	66	61	52	53	55	Raining
" 6	29·78	S.W.	...	96	65	54	56	58	Cloudy
" 7	29·93	N.W.	...	90	64	51	55	55	Hazy
" 8	29·94	N.E.	0·17	76	61	52	52	55	Cloudy
" 9	29·95	E.	...	69	58	52	52	54	Overcast

Notes, Short Comments, and Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND, WHEN ACCOMPANIED BY BLOCKS, IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1897, which was completed with the issue of June 26th, was given in THE LANCET of July 3rd. It is intended, in future, to include the Index and Title-page for each past half-yearly volume in the first number of the succeeding volume, as in the present case, instead of in the last number of the volume itself, as heretofore.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1897 are now ready. Bound in cloth, gilt lettered, price 18s., carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2s., by post 2s. 3d.

To be obtained on application to the Manager, accompanied by remittance.

THE ISOLATION OF ARMY MEDICAL OFFICERS.

"AN OLD SOLDIER" writes to us on the causes of the alleged isolation of army doctors, which he attributes mainly to two causes—namely, their separation from corps and regiments, and their having been constituted into a separate body for one thing, and their desired assumption of purely military titles for another. The writer of this communication expresses himself with no unkindly feeling to medical officers—quite the reverse; but we do not see that any good would arise from the publication of his letter, which does not accurately state the case. It was not in the interest of the medical officers that their regimental connexion was severed, but in the interest of the State and for the efficiency of military service, and the occasion for the present feeling first arose out of the abolition of relative rank.

A MODIFIED FORM OF BOTTINI'S PROSTATIC CAUTERY.

BOTTINI'S prostatic cautery has an external tube resembling a catheter with a longitudinal opening on the concave aspect of its bend, this opening being made for the reception of a platinum galvano cautery which is capable of being moved along the stem for a short distance. The wires within the tube convey the galvanic current to the cautery, the remainder of the instrument being kept cool when it is in use by means of a stream of water circulating through it. Dr. Albert Freudenberg, of Berlin, after having repeatedly operated with the instrument in its original form, was led to make some modifications in the details of its construction, whereby it seems to be improved without any departure from the general principles followed by the original inventor. The new instrument has a stout cylindrical handle, through which the cooling water circulates, as well as through the stem. The cautery is not made of platinum, but of platinum-iridium, which is harder than the former and requires less current to heat it, as it has a higher electrical resistance; the two conducting wires are replaced by a much stouter wire which is attached to one end of the cautery, the other end of the cautery being riveted to the rigid tube; finally, the new instrument is three inches shorter than the original one, and its connexions with the wires supplying the current are much less likely to be in the way of the operator. The most important advantage, however, which Dr. Freudenberg claims for his instrument is that it is not injured by antiseptic solutions and may be effectually sterilised by boiling. The cautery not being in sight during an operation, there was in the original instrument no means of ascertaining its temperature, and its power of penetrating the tissues could only be estimated from the sensation of resistance communicated to the hand while its position was being gradually altered. To remedy this defect Dr. Freudenberg has added an electrical accumulator provided with an ampère-meter, which enables the operator to read the strength of the current at any time, and thereby gives him an indication of the temperature of the cautery. This accumulator will, of course, serve for most kinds of galvano-cauteries as well as for Bottini's cautery.

Dr. William Roberts.—The degrees mentioned are not registrable in England, and would not, therefore, legalise medical practice here by gentlemen holding them. Our correspondent is advised to write to the Registrar of the General Medical Council, 299, Oxford-street, London, W., for further information.

C. P. (Dalston).—We never recommend individual practitioners. Our correspondent must obtain the information from his own medical man.

"AN URGENT APPEAL."

To the Editors of THE LANCET.

SIRS,—I desire to gratefully acknowledge the enclosed subscriptions on behalf of the widow and eight children of the late Mr. Campe. Again would I earnestly commend this saddest of cases to the generous sympathy of the medical profession.

I am, Sirs, yours faithfully,

36, New-road, Rotherhithe, Sept. 8th, 1897. WM. ASTLEY COOPER.

	£	s.	d.
Mr. Terry (Bath)	5	0	0
J. E. J. (an old Guy's man)	0	10	0
Dr. Wm. Easby	0	5	0
Dr. Domett Stone	1	1	0
Mr. C. T. B. Maisey	1	1	0
Mr. J. Faraker	0	10	6
G. W. D.	0	5	0
Mr. Wm. Astley Cooper ...	1	0	

Mr. A. H. Nicholson.—Application should be made to the Secretary of the Royal Medical Benevolent College, Mr. J. B. Lamb, 37, Soho-square, W.

Mr. William Moor.—We should advise our correspondent to try yet another "orthodox aurist."

A CURIOUS BICYCLE ACCIDENT.

ONE of our cial correspondents at Montreal writes: "At the annual meeting of the Montreal Bicycle Club, held here on Aug. 28th, a remarkable cycling accident happened. It occurred in the first heat of the two-mile tandem race, when, during a spurt in the last lap at the far curve on the south side of the grounds, where the track curves up against the fence surrounding the grounds, the tandem ridden by L. S. Robertson and J. Drury became unmanageable. The machine actually jumped the fence, which is over three feet high, and the pedals of the one ridden by Provencher and Eaves becoming entangled with it their machine followed it. The four men and the two machines disappeared over the fence as if the earth had swallowed them up. Beyond a few bruises to the men and a broken chain on one of the machines no damage was done. Provencher and Eaves were able to ride in the final heat, but Robertson had to go home in a cab. It was a remarkable incident and a wonder that any of the riders escaped without broken bones."

THE CONVEYANCE OF DEAD BODIES ON AMERICAN RAILWAYS.

IN a paper read not long ago on the Relation of Railway Companies to State Boards of Health Dr. G. P. Conn, chief surgeon to the Boston and Maine Railway, stated that a few years ago the National Association of Baggage Agents formulated the following rules, which have been adopted by railroads and State boards of health throughout Pan-America:—

"Rule 1.—The transportation of bodies of persons dead of small-pox, Asiatic cholera, typhus fever, or yellow fever is absolutely forbidden.

"Rule 2.—The bodies of those who have died of diphtheria, anthrax, scarlet fever, puerperal fever, typhoid fever, erysipelas, measles, and other contagious, infectious, or communicable diseases, must be wrapped in a sheet thoroughly saturated with a solution of bichloride of mercury in the proportion of one ounce of the bichloride to a gallon of water, and encased in an air-tight zinc, tin, copper, or lead-lined coffin, or in an air-tight iron casket, hermetically sealed and all enclosed in a strong, tight, wooden box; or the body must be prepared for shipment by being wrapped in a sheet and disinfected by a solution of bichloride of mercury as above, and placed in a strong casket or coffin, and said casket or coffin encased in a hermetically sealed (soldered) zinc, copper, or tin case, and all enclosed in a strong outside wooden box, of material not less than one and one half inches thick.

"Rule 3.—In cases of a contagious, infectious, or communicable disease the body must not be accompanied by any articles which have been exposed to the infection of the disease. And in addition to a permit from the board of health or proper health authorities station agents will require an affidavit from the shipping undertaker stating how the body has been prepared and the kind of coffin or casket used, which must be in conformity with Rule 2.

"Rule 4.—The bodies of persons dead of diseases that are not contagious, infectious, or communicable may be received for transportation to local points in the same state, when encased in a strong coffin or metallic case and enclosed in a strong wooden box securely fastened so that it may be safely handled. But when it is proposed to transport them out of the state to an interstate point (unless the time required for transportation from the initial point of destination does not exceed eighteen hours), they must be encased in air-tight zinc, tin, copper, or lead-lined coffin, or an air-tight iron casket, or a strong coffin or casket encased in a hermetically sealed (soldered) zinc or tin case, and all enclosed in a strong outside wooden box of material not less than one inch thick. In all cases the box must be provided with four iron chest handles.

"Rule 5.—Every dead body must be accompanied by a person in charge, who must be provided with a ticket marked 'Corpse,' and a transit permit from the Board of Health or proper health authority, giving permission for removal, and showing name of deceased, age, place of death, cause of death (and if a contagious or infectious nature), the point to which it is to be shipped, medical attendant, and name of undertaker."

Rule 6 refers only to the "transit permit."

"Rule 7.—The box containing corpse must be plainly marked with paster, showing name of deceased, place of death, cause of death, and point to which it is to be shipped, number of transit permit issued in connexion, and name of person in charge of the remains.

"Rule 8.—Disinterred bodies, dead of any disease or cause, will not be accepted for transportation unless said removal has been approved by the state board of health, and the consent of the health authority of the locality to which the corpse is consigned has first been obtained, and the disinterred remains, enclosed in a hermetically sealed (soldered) zinc, tin, or copper lined coffin or box, encased in hermetically sealed (soldered) zinc, tin, or copper cases."

Mr. Edward Barker.—We are unable to understand the enclosure, unless the gentleman named is distributing the cards wholesale.

A COMPLAINT.

To the Editors of THE LANCET.

SIRS,—I enclose herewith a cutting from the *Echo* of to-night's issue. The writer describes himself as an aural specialist, and answers correspondence in the columns of the paper. Mr. Passmore Edwards as a philanthropist claims that the profits of his paper are spent in founding hospitals and libraries, &c.; but surely he is inconsistent in making the *Echo* the recognised organ of quacks and faddists and allowing such attacks as the enclosed to be made upon an honourable profession.

I am, Sirs, yours truly,

Sept. 3rd, 1897. LAUNCELOT ARCHER.

*** The cutting referred to is a letter signed "Lennox."—ED. L.

M.R.C.S., L.S.A.—We are obliged to our correspondent for his information, but the matter being still *sub judice* we cannot comment upon it at present.

Surgeon (Liverpool) has omitted to enclose his name and address.

"URBER" COMBINATION.

THAT suitable and sensible or, as manufacturers prefer to style it, "hygienic" clothing is of the first importance to health is recognised now by all medical men; but in our climate it is sometimes difficult to devise garments adaptable to a rapidly changing environment. For example, at the present time many people want a wrap that will withstand heavy rain, but which will not by its weight retard the easy motion of the body or by its substance prevent free perspiration. Messrs. T. Burberry and Sons, of 30, Haymarket, S.W., have devised a process of treating light materials to meet these requirements. By this process each separate fibre of the materials is "proofed" so that rain stands on it in beads like quicksilver, ready to be shaken off at the first movement, but a certain amount of passage of air between the fibres takes place. It follows that it is possible to force water through the material, though it is impossible to make the cloth soak it up and become sodden, heavy, and not only uncomfortable, but dangerous. The specimen coats sent for our inspection were lined with a light silk lining "proofed" by the same process as the homespun. We have tested the garments thoroughly and have found them useful under the circumstances indicated, when heavy ulsters or mackintoshes would be burdensome and uncomfortable.

A. P. M.—(1) Yes. (2) It would have to be written for. (3) There is no regular agent we fancy, but probably Messrs. Baillière, Tindall, and Cox would procure it.

"NOTE UPON THE TOXIC EFFECTS OF THE SWEAT OF A HEALTHY MAN."

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Sept. 4th appeared a translation from *Comptes Rendus* of a paper by M. S. Arloing on the toxicity of normal human sweat—a subject which has latterly engaged the attention of many continental writers. In the Spanish medical journals numerous contributions appeared. *El Siglo Medico* of Aug. 22nd had a short but excellent annotation on "Human Sweat," in which the following quotation from an old Latin writer appears: "Take the sweat of a horse from between the ribs of the right side, and with this wet the puncture of a lancet; this wound will be mortal. This action has been performed with desired results." I am, Sirs, yours truly,

Cavendish-row, Dublin, Sept. 4th, 1897. GEORGE FOY.

An Old fashioned Physician has forgotten to enclose his name and address.

G. S. (Guernsey).—We are unable to help our correspondent. He must consult his own medical man.

A DUEL BETWEEN MEDICAL MEN.

AN armed encounter between members of the medical profession at this the close of the nineteenth century was certainly not to be anticipated, but the old saying that it is always the unexpected which arrives has once more been verified. It is only too true that a duel was recently fought at Bonn, the combatants being both medical practitioners, and most unfortunately one of them met with his death from a penetrating wound of the thorax. It seems that two of the assistants at a surgical clinic, named Reusing and Fischer, had a violent altercation over a professional matter, the former accusing his colleague of malpractice in the conduct of an operation, and as apparently there was no older and wiser person at hand to pour oil upon the troubled waters a hostile meeting ensued, with the above-mentioned deplorable result. That duels should still survive on the Continent, especially in military circles, is, perhaps, not to be wondered at under the existing régime, but happily the vast majority of medical men of all nationalities are the possessors of well-balanced minds, and recourse amongst them to the *argumentum baculinum* for the adjustment of technical disputes must be an altogether exceptional occurrence. Complaints are often heard of the overcrowding of the medical profession on the other side of the Channel, but of all depletory methods the slaying of one's *confrère* is surely the least philosophical. A duel at the present day is an anachronism. As a mode of settling scientific controversy it is not only out of date, but also about the most illogical procedure conceivable. Killing an opponent does not prove the survivor's case; while the gratification of an ignoble feeling of personal resentment is dearly purchased at the expense of life-long remorse. The principals in a duel are, of course, blameworthy, but for them there are excuses, seeing that most human beings are more or less passionate by nature. For the seconds, generally speaking, there is absolutely nothing to be said. They are simply the abettors of a crime in which they run no bodily risk, and it is against them that retributive justice should be mainly directed. If seconds would only consider the heinousness of their position there would soon be an end of duelling.

A FRENCH MEDICAL DICTIONARY.

A CORRESPONDENT writes to us in answer to Mr. Hay Forbes's query:—"Mr. Hay Forbes will find the 'Terminologia Medica Polyglotta,' edited by Dr. Theodore Maxwell (London: J. & A. Churchill, price 16*s.*), a very useful book for his purpose."

S. F.—The builder ought to pay with many thanks for the prompt attention. Whether the fee can be recovered from him is another matter and depends wholly on the view a county court judge would take of the question of agency—i.e., whether the workman who called our correspondent was or was not the agent of the builder. One judge might think he was such an agent, another might hold a contrary opinion. That the builder ought to pay is certain.

R. M.—Barnard and Stocker, Medical Partnerships, &c. (London: Stevens and Son), price 10*s.* 6*d.*

L.R.C.P., &c.—Our correspondent has not enclosed his name and address.

ERRATA.—In the Student's Number of THE LANCET published on Aug. 21st, page 445, col. 1, line 70, the word "sixth" should be *seventh*. On page 442, col. 1, line 5, "1895" should read *1896*.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (13th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M., Ophthalmic 1.15 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), Westminster (2 P.M.).

TUESDAY (14th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.) Cancer (2 P.M.).

WEDNESDAY (15th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.).

THURSDAY (16th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.).

FRIDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.).

SATURDAY (18th).—Royal Free (9 A.M. and 2 P.M.), Middlesex, (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.) the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

During the week marked copies of the following newspapers have been received:—*Greenock Telegraph, Cork Examiner, Hereford Journal, Manchester Courier, Whitehaven Free Press, Court Circular, Science Siftings, Blackburn Times, Lincolnshire Echo, Edinburgh Evening Dispatch, North-Eastern Daily Gazette, Scotsman, Norfolk Standard, Times of India, Pioneer Mail, Birmingham Daily Gazette, Glasgow Herald, Sheffield Independent, Darwen Post, Bristol Mercury, Architect, Preston Herald, Bedford Times, Builder, Bradford Argus, Leyfonstone Independent, Devon Weekly Times, Sussex Daily News, Keen's Bath Journal, Bolton Chronicle, Liverpool Daily Post, Luton Reporter, Leighton Buzzard Reporter, Tottenham Herald, Yorkshire Post, Leicester Post, Bexhill Chronicle, Cheltenham Mercury, Observer and Chronicle (Bournemouth), Carnarvon Herald, Bridgwater Independent, Walsall Advertiser, Evesham Journal, Surrey Comet, Portsmouth Times, Newcastle Leader, Norwood Review, Dunstable Advertiser, Leeds Mercury, Salisbury Journal, Brighton Gazette, Buxton Herald, Jarrow Express, Banffshire Herald, Bazaar, Sanitary Record, Western Daily Mercury, Mining Journal Reading Mercury, Hertfordshire Mercury, Public Health, Local Government Chronicle, Weekly Free Press and Aberdeen Herald, City Press, Brixton Free Press, Gazette (Montreal), Local Government Journal, Surrey Advertiser, Eastbourne Gazette, Sussex and County Herald, Daily Telegraph (Launceston), Swindon Advertiser, The Journal (Carmarthen), Evening Star (Ipswich), West Middlesex Herald, Keighley Herald, Sussex Coast Mercury, &c., &c.*

Communications, Letters, &c., have been received from—

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R.—Royal Photographic Society, Lond., Secretary of; Dr. J. Crawford Renton, Glasgow; Mr. G. V. A. Robertson, Scarborough; Dr. W. Roberts, South America; Dr. S. J. Ross, Bedford.

S.—Mr. T. Smith, Lond.; Salop Infirmary, Shrewsbury, Secretary of; Mr. O. Sivewright, Strichen; Dr. Sydenham, Uckfield; Dr. J. A. Shaw-Mackenzie, Lond.; Dr. G. A. Sutherland, Lond.; Messrs. Street and Co., Lond.; Mr. S. Schenkein, Lond.

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X.—X., Preston.

Letters, each with enclosure, are also acknowledged from—

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I.—Ickringill's Patent Hygienic and Elastic Cloth Syndicate, Keighley, Secretary of; Iota, Lond.; Index, Liverpool.

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X.—Xenophon, Lond.; X. Y. Z., Lond.; X., Lond.; X. Y. Z., Liverpool.

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